MOTOR AGE

Established 1899 — Published Monthly

Vol. LV, No. 12 — November, 1936

JULIAN CHASE, Directing Editor
W. K. TOBOLDT, Editor
FRANK P. TIGHE, Managing Editor — ROBERT HANKINSON, Technical Editor
GEOFFREY GRIER, Art Editor
JOS. GESCHELIN, Detroit Technical Editor — H. E. GRONSETH, Detroit Editor
MARCUS AINSWORTH, Specifications Editor

In This Issue

Presenting The 1937 Cars
Prepared by Bill Toboldt and Joseph Geschelin
Special Section, Pages 1-32

Chrysler ..... New Car Section Pg. 2
Pontiac ..... New Car Section Pg. 4
Ford ..... New Car Section Pg. 6
Dodge ..... New Car Section Pg. 8
Hudson ..... New Car Section Pg. 10
Willys ..... New Car Section Pg. 11
Chevrolet ..... New Car Section Pg. 12
Nash-Lafayette ..... New Car Section Pg. 14
Oldsmobile ..... New Car Section Pg. 16
Terraplane ..... New Car Section Pg. 18
Lincoln-Zephyr ..... New Car Section Pg. 19
Plymouth ..... New Car Section Pg. 20
Buick ..... New Car Section Pg. 22
DeSoto ..... New Car Section Pg. 24
Cadillac-LaSalle ..... New Car Section Pg. 26
Cord, American Bantam, Graham ..... New Car Section Pg. 29
Packard, Studebaker, Pierce-Arrow ..... New Car Section Pg. 30

Analyzing Results of the Vanderbilt Cup Race 49
By Bill Toboldt and Bob Hankinson
Why Jobbers? 52
Carbon and Valve Jobs Go Super Service 53
Readers' Clearing House 54
News and New Products 62
Mechanical Specifications 74
Tune-up Specifications 75
Motor Car Price, Weight and Body Table 76
Advertisers' Index 106-107

Copyright 1936 by Chilton Company (Inc.)

C. A. MUSSELMAN, Pres. and Gen. Mgr.; J. S. HILDRETH, Vice-Pres. and Manager; G. C. BUZBY, Vice-Pres.

Offices: Philadelphia, Phone Sherwood 1424. New York City, 239 W. 39th Street, Phone Pennsylvania 6-1100; Chicago, Room 916 London Guarantee & Accident Bldg., Phone Franklin 9494; Detroit, 1015 Stephenson Bldg., Phone Madison 2090; Cleveland, 609 Guardian Bldg., Phone Main 6860; San Francisco, 444 Market Street, Room 305, Phone Garfield 6788; Long Beach, Calif., 1595 Pacific Ave., Phone Long Beach 613-238. Subscription Price: United States and Possessions, Postal Union Countries, $2.00 per year; Canada and foreign, $3.00 per year. Single copies, 25c.

Owned and Published by

CHILTON COMPANY
(Incorporated)

Executive Offices
Chestnut and 56th Streets, Philadelphia, U. S. A.

C. A. MUSSELMAN, *President*
FRITZ J. FRANK, *Executive Vice-President*
FREDERIC C. STEVENS, JOSEPH S. HILDRETH, GEORGE H. GRIFFITHS, EVERIT B. TERHUNE, ERNEST C. HASTINGS, *Vice-Presidents*
WILLIAM A. BARBER, *Treasurer*. JOHN BLAIR MOFFETT, *Secretary*.

HOLMES Power-Operated SPEED KING WRECKER

PAYS FOR ITSELF many Times

• IN GENEROUS TOWING FEES
• BIG-PROFIT REPAIR JOBS
• AND ADVERTISING VALUE

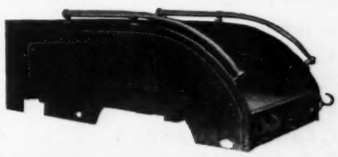


No other equipment compares with its earning ability

From the day this double-boom Holmes Wrecker goes to work for a shop or garage, it starts piling up profits. It attracts new customers, pulls in from any distance the tough hard-to-handle recovery jobs, and keeps the shop busy on its most profitable repair work, wrecked cars.

Both large and small operators have become most enthusiastic over this service unit. They have found it to be their most dependable source of service profits. No shop or garage can afford to miss out on today's enormous wrecker profits—investigate this Holmes Power-Operated Speed King Wrecker and Service Body! Its speed, power and flexibility, together with many exclusive Holmes features, make it the best-paying investment you can make. See your jobber or write us direct for information.

Holmes new 6% Finance Plan lets you buy this unit on easy terms out of its earnings. See your Jobber today.



Holmes Service Body is furnished fabricated for the double-boom wrecker or without openings as a standard service body.

ERNEST HOLMES COMPANY
CHATTANOOGA • TENNESSEE



CHAMPION

THE PREFERRED STOCK INVESTMENT

CHAMPIONS HAVE WHAT IT TAKES

TO ASSURE FOR YOU	TO PROTECT YOU AGAINST
1. Acceptance	1. Sales Resistance
2. Sales	2. No Turnover
3. Profits	3. Infrequent Profits
4. Turnover	4. Obsolescence
5. Superior Quality	5. Inferior Quality
6. Exclusive Features	6. Stereotyped Product
7. Price Acceptance	7. Cut Price Competition
8. Advertising Support	8. Prolonged Stock Investment
9. Cash Value	9. Final Loss

Champion Spark Plugs have earned and continue to enjoy the preference of the motoring public to such an extent that dealers everywhere recognize Champion as the preferred stock investment in its field.

When you consider any investment you naturally look for security and safety coupled with yield or return on the investment. In selecting merchandise for re-sale the careful dealer applies the same consideration because his stock is literally his capital investment.

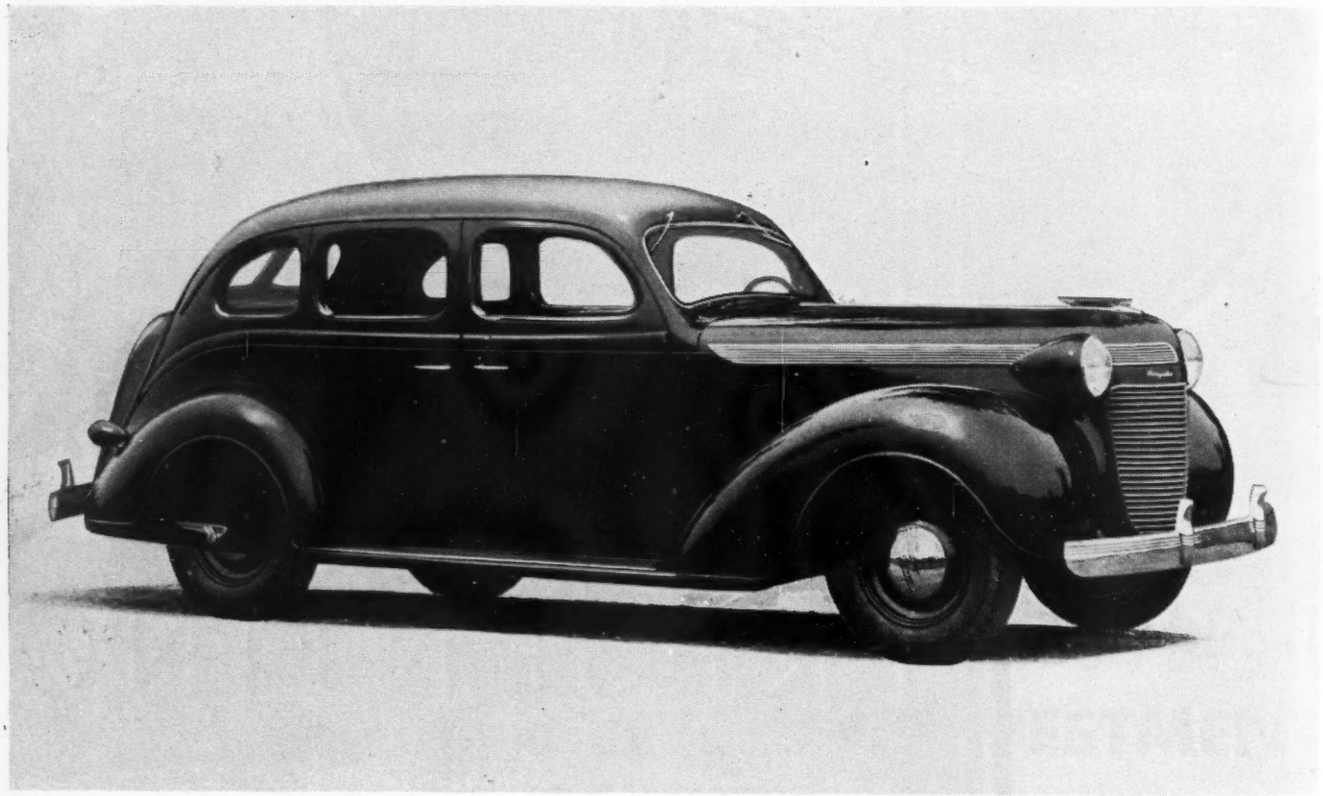
For over a quarter of a century Champion Spark Plugs have maintained a world wide reputation for making every engine a better performing engine. With the consumer preference that has been built this way, Champions obviously afford the dealer the surest way to make certain of maximum profits and turnover, and in turn to serve his customers' best interests.

Invest your money in a proven money maker, the choice of racing champions and automotive engineers; the favorite of an ever growing majority of the world's motoring millions. Trade safely in the spark plug market. Buy and sell "CHAMPION-PREFERRED."


RESENTING
THE
1937
CARS

CHRYSLER

Royal Six in Low Price Field—All Steel Bodies with Improved Insulation—Hypoid Rear Axle Reduction Gears



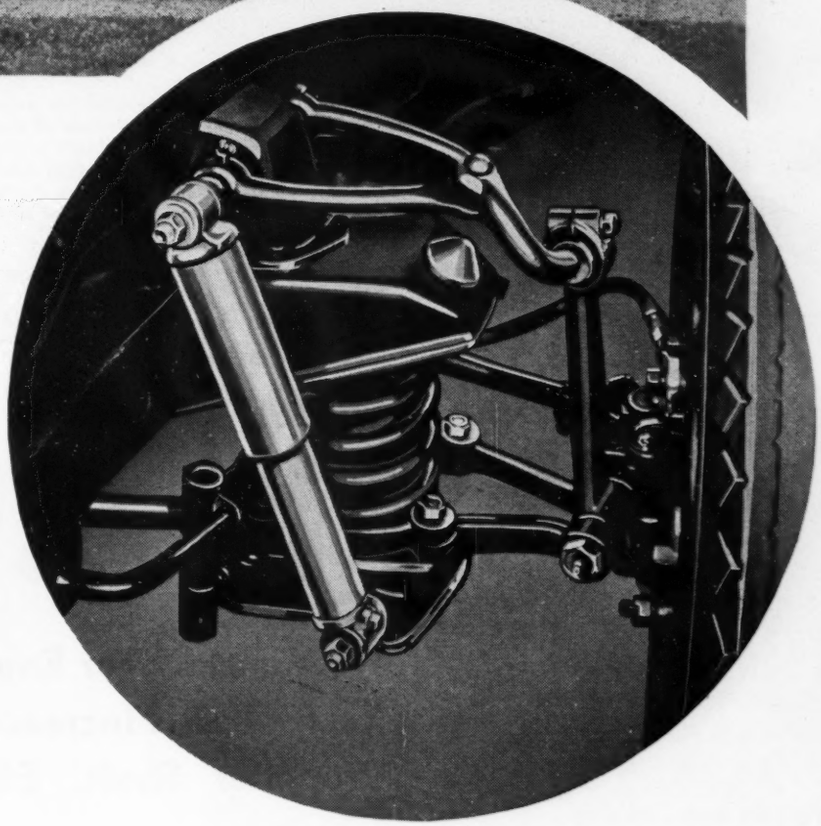
THE Chrysler line for 1937 comprises four cars, with a total of 20 body styles. They are the Chrysler Royal with a wheelbase of 116 in. and 93 h.p.; the Chrysler Imperial with a wheelbase of 121 in. and 110 h.p.; the Chrysler Custom Imperial on a wheelbase of 140 in. and 130 h.p.; and the Chrysler Airflow, with a wheelbase of 128 in. and 130 h.p.

The Royal is made in 10 body styles, six body styles are offered in the Imperial, the Custom Imperial comes in seven-passenger sedan and sedan-limousine models and the Airflow is offered in six-passenger sedan and coupe body styles.

The most significant feature of the 1937 line is Chrysler's definite entry into the low-priced field with the Royal at a price lower than that ever placed on a Chrysler of more than four cylinders.

Heading the list of 1937 features in the Royal is a new Gold Seal engine, which produces 93 h. p. with 228 cubic in. piston displacement. The high compression ratio of 6.5 to 1. Valves have been newly designed and increased in size to give greater volumetric efficiency. In the exhaust valves Austenitic steel is used. Valve tappets have self-locking screws which do not require locking nuts and





The Chrysler Imperial (opposite page) is mounted on a 121-in. chassis and powered with a 110-hp. engine

A 116-in. wheelbase chassis is used on the Chrysler Royal (above)

Shock absorbers (right) of the two-way telescopic type are used in connection with the independent suspension systems of the Royal and Imperial models

are easier to adjust to proper valve clearance. There has been a change in the piston design for greater efficiency. The pistons are of the "U" type and add measurably to oil economy.

Connecting rod bearings are symmetrical instead of offset and main bearings have been improved by increasing the length of the intermediate bearings.

The width of the front seat cushion has been increased from 44 to 47 in. giving ample room for three persons. The width of the rear seat cushion has been increased three in. and now measures 49 in. The shaft tunnel has been eliminated from the rear compartment through the use of the hypoid rear axle.

The insulation of the body has been improved. Although the body still follows the contours of the frame it is no longer mounted directly on the frame but on 14 short outriggers or brackets which are riveted to the frame. In addition, there are 4 body support points on the X-member. The outriggers are completely insulated at the top and bottom and through the sleeve where the body bolt passes by pure gum rubber. No metal contact between body and mountings is possible, thus preventing the transfer of noise from the frame to the body. In addition, the structure strength of the car is materially increased.

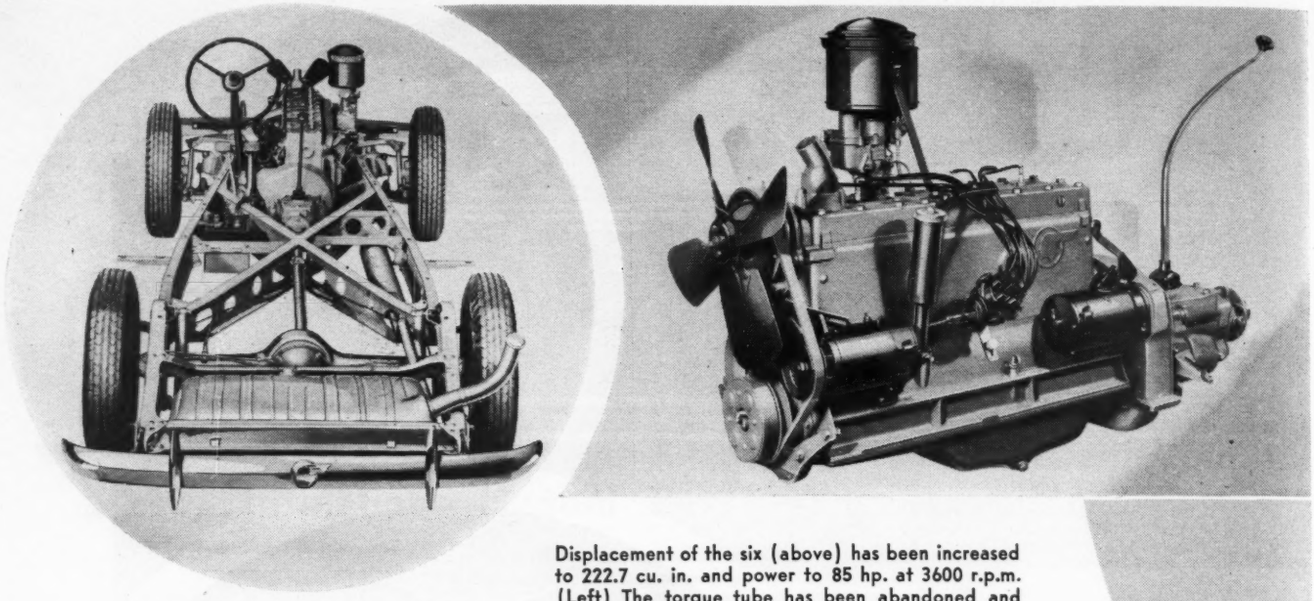
The center section of the X-member of the frame has been improved to give greater rigidity to the whole assembly and a brace has been added on each side between the X-member and the side channel, tying the X-member and the side members together more firmly and rigidly.

The redistribution of weight that was first featured in the Airflow and adopted in other Chrysler cars last year has been carried still further. In the 1937 Royal and Imperial the engine has been moved farther forward, thus increasing the cradled area between the axles in which the passengers ride.

A two-way telescope type shock absorber has been adopted. The independent type of front wheel springing is retained, as are the ride stabilizer and floating power engine mountings.

In appearance, the Royal is entirely new. The hood rounds down grace-

(*Turn to page 32, please*)



Displacement of the six (above) has been increased to 222.7 cu. in. and power to 85 hp. at 3600 r.p.m. (Left) The torque tube has been abandoned and the propeller shaft is now of the two piece type. The X-member is of I-section. (Bottom of page) The link parallelogram type knee action replaces the Dubonnet system. The master six chassis with conventional springing has been discontinued.

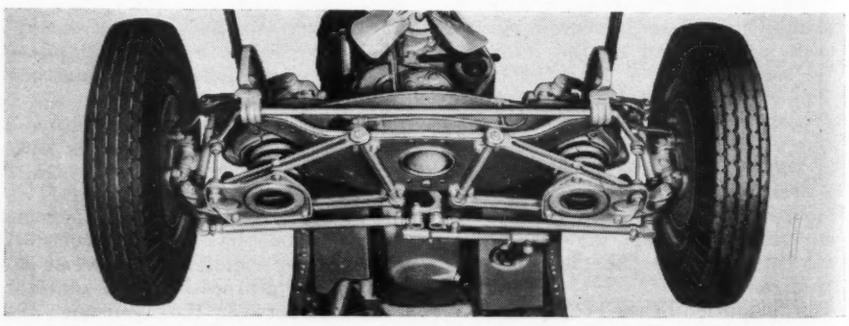
PONTIAC

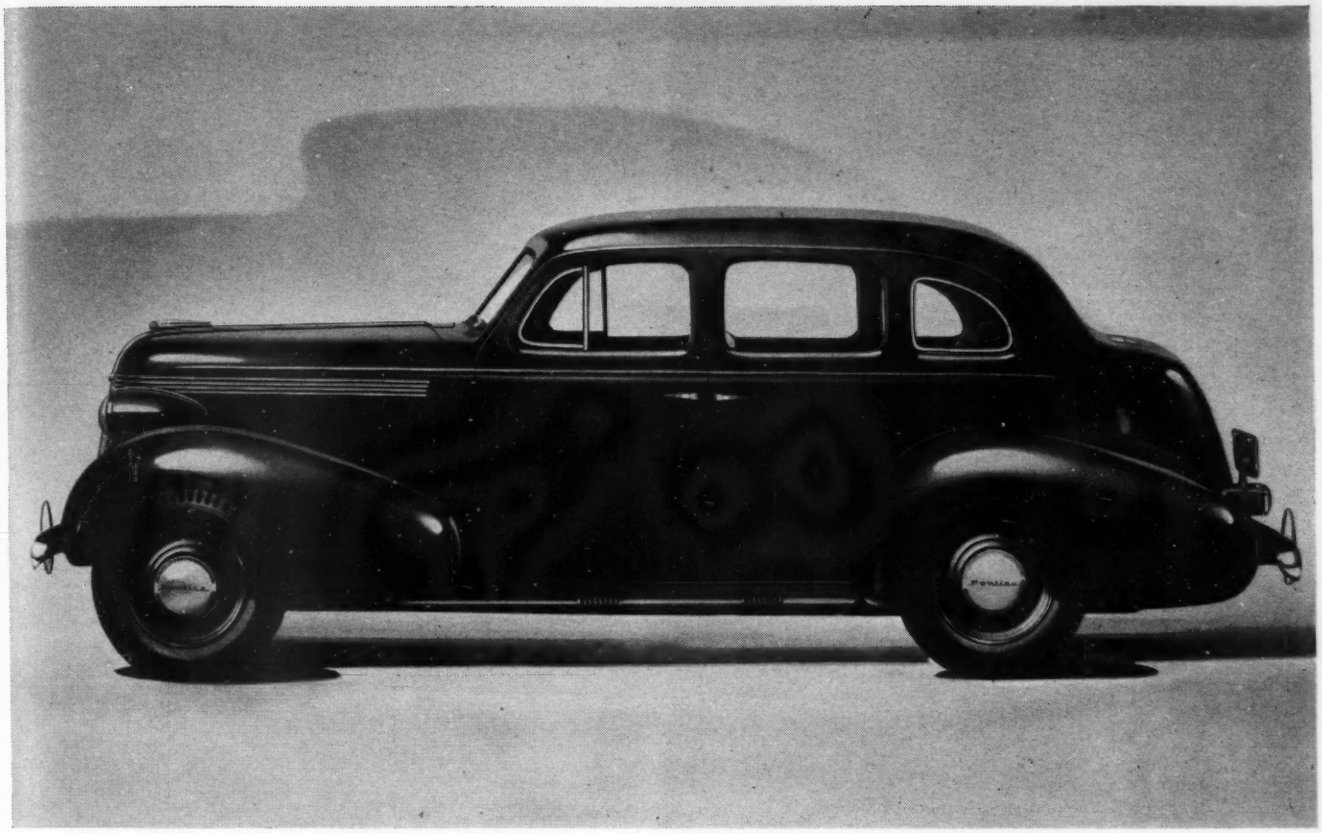
New and Larger Engines—Wheelbase of Each Chassis Increased 5 in.—Two Piece Propeller Shaft, Eliminating Tunneling

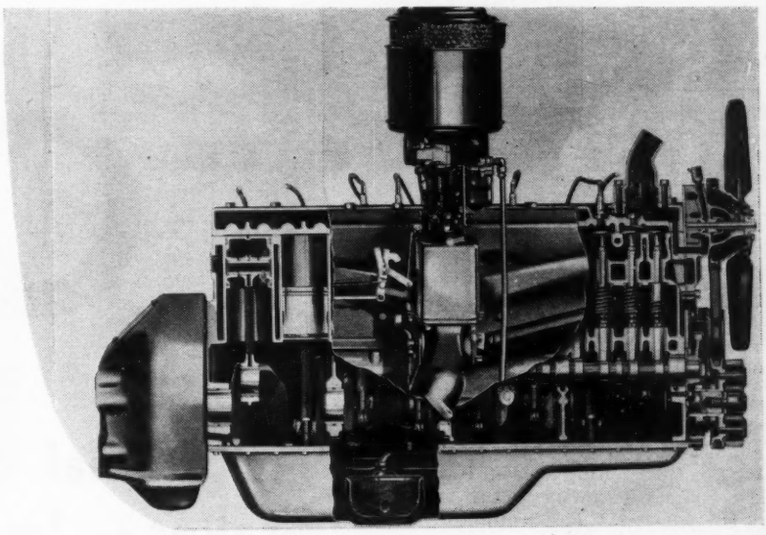
TWO lines with 5 in. longer chassis —a 117 in. wheelbase deluxe Six and 122 in. wheelbase deluxe Eight—constitute the Pontiac offering for the 1937 season. New all-steel bodies roomier, lower and more pleasing in appearance; entirely new chassis; increased engine displacement on both six and eight with improved performance and better economy, an exposed link parallelogram coil spring knee-action front spring suspension, replacing the Dubonnet enclosed units used the last two years; lower frame and floor levels made possible by the adoption of a new two-piece propeller shaft drive; adoption of Hotchkiss drive, replacing the torque tube drive; completely counterweighted crankshafts; and many other mechanical changes and refinements are outstanding features of the line. Master Six models with conventional springing have been dropped.

While retaining the basic features adopted last year, the 1937 engines have increased displacement. The Six increased from 3⅜ x 3⅞ in. to 3 7/16 x 4 in. now develops 85 hp. at 3600 r.p.m., while the bore of the 3¼ x 3½ in., 1936 Eight remains unchanged. The stroke is now 3¾ in. and, as a result, the engine is now rated at 100 hp. at 3800 r.p.m.

Crankshafts are 100 per cent counterweighted, statically and dynami-







Seven body styles are offered on each chassis. The lines of this deluxe six (above) touring sedan are characteristic of both six and eight lines. (Right) Details of the new 3¼ x 3¾ in. eight-cylinder engine which develops 100 hp. at 3800 r.p.m.

cally balanced with four bearings for the Six and five bearings for the Eight. New rifle drilled connecting rods have interchangeable steel-backed white bearing metal alloy bearings. Chrome nickel alloy pistons of the thin walled type are fitted with two compression rings above the pin and one below.

An improved engine mounting with three-point rubber suspension is used. Front mounting is on the center line of engine below crankshaft; rear mounting is located on each side of clutch housing.

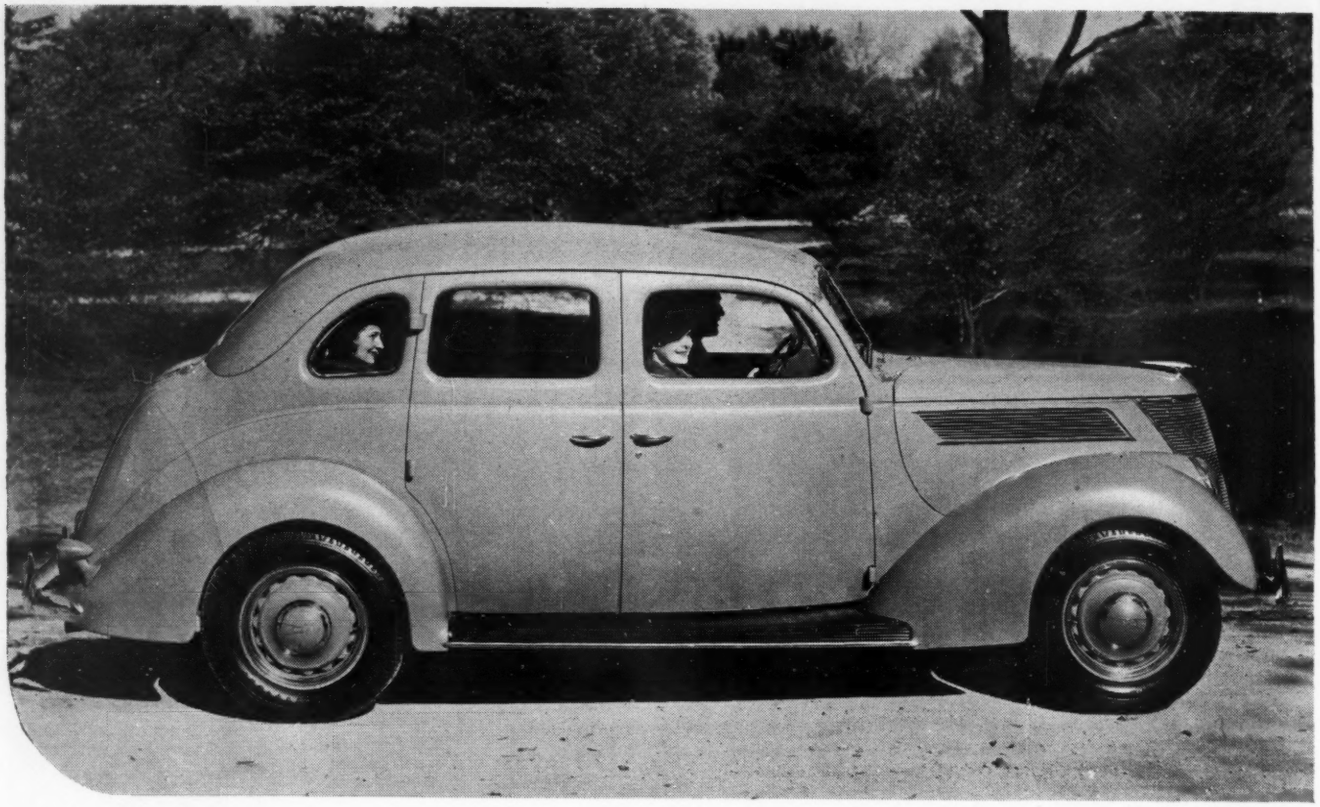
Other features such as full length water jackets, full pressure lubrication, gusher valve cooling, etc., are continued. The carburetor is 1¼ in. Carter downdraft with triple venturi air intake, pneumatic accelerating pump, economizer and anti-percolating device.

The new frame is called the "four-way cantilever" and consists of I-section straight rails which are riveted to the side rails to form a self-bracing "X" member.

The semi-floating rear axle, which was redesigned for the new Hotchkiss drive incorporates several changes of interest. The housing is of two pieces, welded together with a welded-on banjo housing cover and brake flanges butt-welded to the ends. Differential side bearings are Hyatt barrel roller type. New Departure ball bearings which take the axle radial loads and wheel thrust are sealed and carry sufficient lubricant for the life of the car. New Departure double row ball bearings take thrust and radial load at the front of the drive pinion, while Hyatt solid roller bearings support the rear of the pinion gear.

The standard gear ratio is 4.375 to 1. Optional ring gear and pinion sets for mountainous sections and extremely flat plain regions are 4.625 to 1 and 4.125 to 1, respectively.

The dual propeller shaft has its forward half integral with and supported entirely by the transmission. Connecting the front propeller shaft with the rear axle is a short propeller shaft with roller bearing universal joints at each end. A sliding coupling at the rear of the transmission makes slip joints in the universals unnecessary. By thus shortening the movable part of the propeller shaft, its arc of movement occurs under the body kickup where no tunnels are required for clearance. The hydraulic brakes adopted last year are continued. Bodies are equipped with a built-in windshield defroster to be operated from the car heater.



FORD

Additional 60 hp. Engine—New Brakes—Improved Appearance

A CHOICE of two engines, a new 135-cu. in. 60-hp. V-8 engine, or the familiar 221-cu. in. V-8, 85-hp. engine, are offered as options in a single 112-in. wheelbase chassis by Ford for the 1937 selling season. The chassis, which is similar to the one used in the past year, has been improved in detail. Probably the most noteworthy change is the adoption of a new braking system with cable-conduit control and changes in the shoes and anchorages to provide softer pedal and improved braking. Bodies, including the top, are of all-steel construction.

The new 135-cu. in. engine, the announcement of which definitely sets at rest rumors of a "baby" Ford, while new to the United States, has been in use for some years in Europe. In general design it is similar to the larger Ford V-8 engine and has a bore and stroke of 2.6 in. and 3.2 in. respectively. The taxable horsepower is 21.63 and it develops 60 hp. at 3500 r.p.m. Descriptions of this engine printed in British automotive trade papers state that the engine develops 63 hp. at 4300 r.p.m. with a compression ratio of 6.64 to 1. Refinements in the larger V-8 engine, which are also found in the new unit, include improved cooling, cast alloy steel pistons of the slipper type, and larger insert-type main bearings which are now 2.4 in. in diameter, representing an increase of 0.4 in. Camshafts of both engines are now supported in steel backed bearings of the replaceable type. This increase in main bearing diameter should result in reduced vibration. Combustion noise has been reduced by redesigning the exhaust piping and muffler. Further contributing to quiet operation are detailed changes in the rear axle. In addition the propeller shaft is now solid instead of tubular, and has a steady-rest bearing at the center of the torque tube.

Water pumps on the larger V-8 are larger and are now placed at the bottom of the cylinder block, so that they draw water from the bottom of the radiator, rather than pumping water from the top of the blocks to the top





of the radiator as in the past. The new pumps are self sealing and automatically lubricated from the timing gear case. Water jacketing of the cylinder heads has been improved by locating the water outlet connection at the center of the head rather than at the forward end. Air circulation has been increased by improved fan blade design and locating the fan lower in relation to the cylinder block.

A new crankcase ventilating system also contributes toward cooler and more constant engine temperatures as well as improved lubrication. The fan blast forces air into the oil filler pipe and the suction created by car motion withdraws it from the ventilating pipe which has an outlet below the engine. Oil change, it is claimed, is now necessary only at 2000 mile intervals.

Engines are now supported on rubber at four points. Two supports are placed at the front and one at each side of the transmission.

While the new brakes are patterned after the former units, they give better braking with 1/3 less pedal pressure. The servo action decreases as the pedal pressure increases. With the pedal hard down, there is no self-energizing. In the new design the pedal operates a stiff cross shaft, which with the operating levers consists of a single forging. From the cross shaft, the brakes are operated by conduit enclosed cables.

A new worm and roller type steering unit has been adopted. The ratio is now 18 to 1 so as to reduce steering effort. Steering ease has further been improved by changing the king pin angle. The drag link closely parallels the front axle. The new three spoke steering wheel is unusual since the upper spokes are given at 180 degree.

In connection with performance, it is interesting to note that both engines weigh approximately 6.6 lb. per hp. However, engine torque of the larger engine is given at 149 lb. ft. at 2000 r.p.m., while the smaller engine is rated at 94 lb. ft. at 2500 r.p.m.

While no changes are listed on the single plate clutch, gear shifting has been improved by the adoption of an all helical gear transmission on the 85 hp. cars. On cars equipped with the smaller engine, the transmission has helical gears for high and second speeds only.

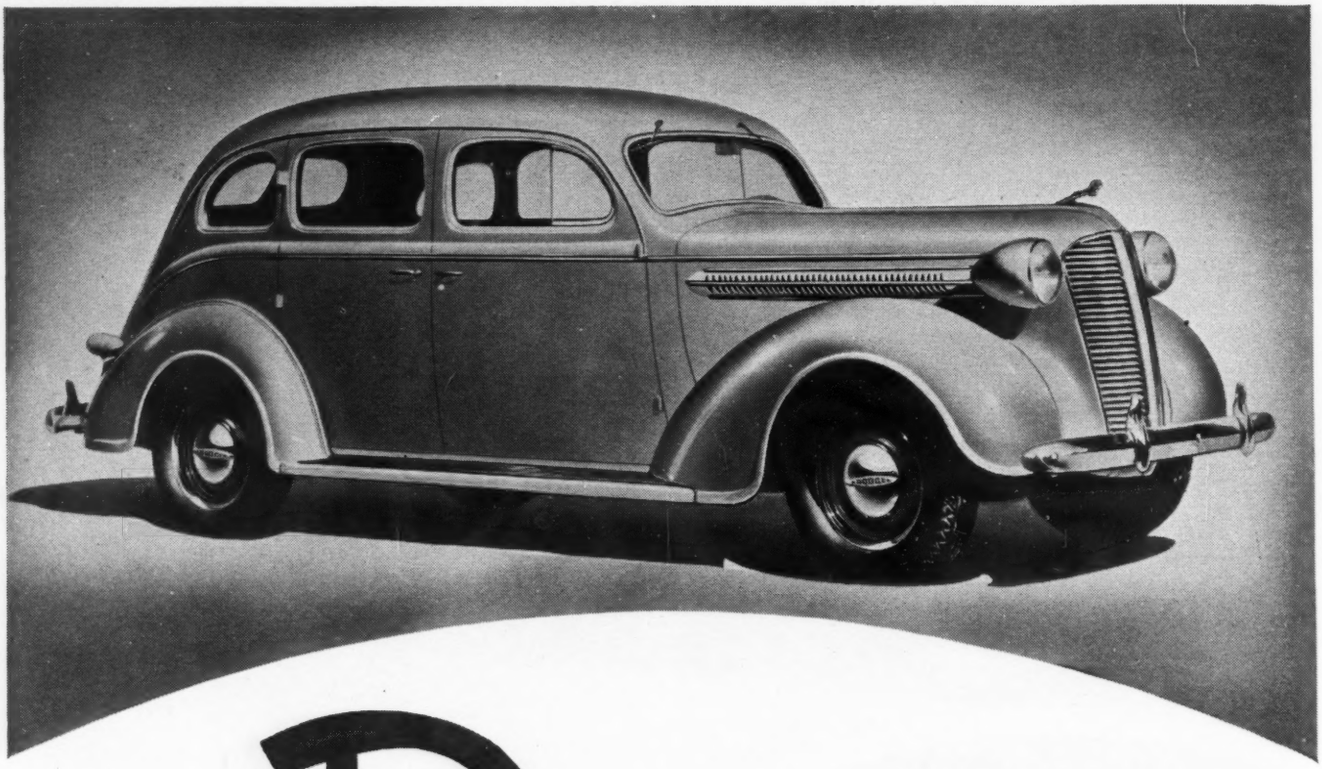
While no official figure was available as to the fuel economy to be expected from the new 60 hp. engine, it is believed to be approximately 25 m.p.g.

The new cars will be available in both deluxe and standard body types. Deluxe types will be powered only with the improved 85-hp. engine. In standard types, either the large or small engine is optional. Just how much lower in price the car powered with the smaller engine will be over the larger job, was not made known at the time of going to press.

Six body types are available with deluxe equipment and five with standard equipment. A new club coupe is the latest of the eleven body models to be offered.

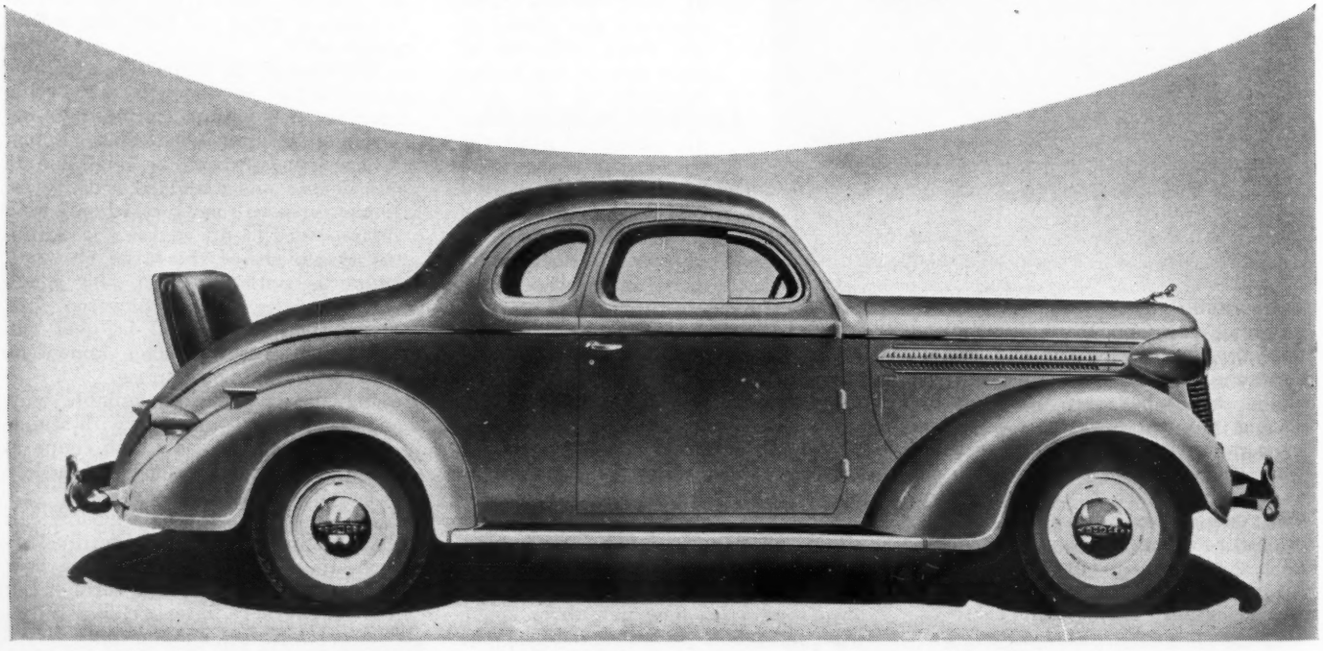
Appearance of the new models can best be appreciated from the illustrations. However, windshields are now V-shaped, carrying out the form of the new V-shaped radiator grille. Wind-

(Continued on page 32)



DODGE

Hypoid Rear Axles—All Steel Bodies—Body Supports of Rubber



HYPOID rear axles to eliminate objectionable tunneling, stronger X-type frame, new all steel bodies with steel roof and underbody which are larger and roomier than last year, and rubber mountings for the body are among the new features for the 1937 Dodge line.

While appearance retains the same general characteristic lines of last year, the radiator front has been moved forward and the grille is new as are the fenders.

Ten body styles will be available on the new 115 in. wheelbase chassis 2 and 4 door sedans, 2 and 4 door touring sedans, business and rumble seat coupes, convertible coupe and sedan. Sedans have rear door luggage compartments, while touring sedans have a built-in trunk compartment. In addition there will be a 7-passenger sedan and a 7-passenger limousine mounted on a 132-in. chassis.

Mechanical details and specifications of the 6 cylinder 3¼ x 4⅜ in. engine, developing 87 hp. at 3600 r.p.m., remain virtually the same as last year. Gear shifting is improved as the result of a new 10-in. clutch plate and the use of a roller in the second to high shift rail, thereby decreasing the effort to change gears. Another feature is the adoption of a shunt wound generator with full voltage and current control.

Riding qualities have still further been improved by moving the engine and both front and rear seats further forward. In addition, the sway bar features a new rubber mounting and is mounted on top of the front cross member. The linkage connecting it to the axle is independent of the shock absorber linkage. The spring rate has been changed to produce an easier ride.

Possibility of body noises has been reduced by means of a stiffer frame and the use of rubber body mountings. To attain the stiffer frame additional cross members have been added and the X-member is more heavily boxed at the center. The body is now completely suspended on rubber, being mounted on outrigger type brackets containing rubber spools. Five spools are located on each side rail and two on the rear cross member. In addition there are two rubber biscuits at each kick-up.

Road feel through the steering gear has been improved by decreasing the steering gear ratio from 18.2 to 16.4 to 1. In addition the drag link and tie-rod end joints are encased in leather boots to keep out water and dirt and thus improve lubrication.

Further features affecting lubrication are: an Oilite clutch pilot bearing with sealed-in lubricant. The plug for lubricating the universal joints has been removed as these points will not require lubrication for over 30,000 miles; on the hypoid axles the usual lubricating fitting at the wheel bearings has been replaced by pipe plugs and should require lubricant at 12,000-mile intervals.

Bodies are wider, roomier, and of all-steel construction, with steel top. The new body is 3 in. wider at the cowl and front seat, and 50 in. clear from floor to roof. The rear seat width has been increased by 2½ in. Front doors are hinged at the front pillar and all wide-door models have three hinges.

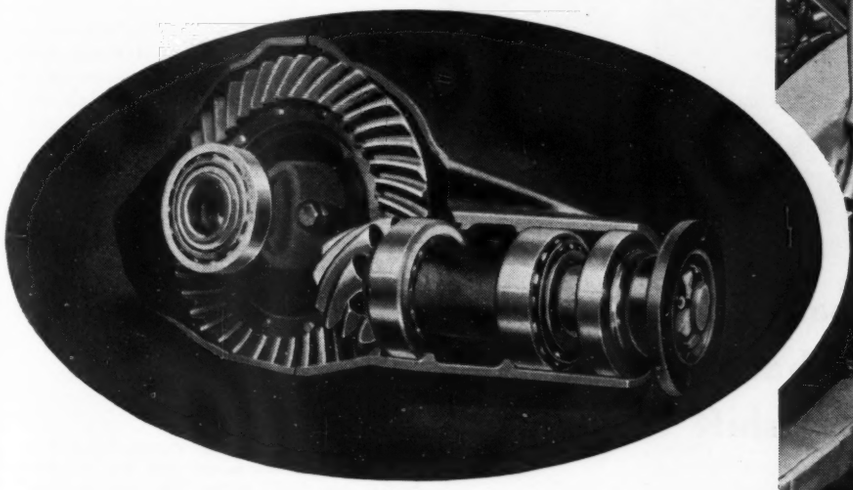
The windshield is a one-piece glass, affording full clear vision. The front ventilator pane now is pivoted on friction bearings, the rear-quarter ventilator remaining the same as before. The rear window clears the wheel house sufficiently to permit the window glass to go all the way down.

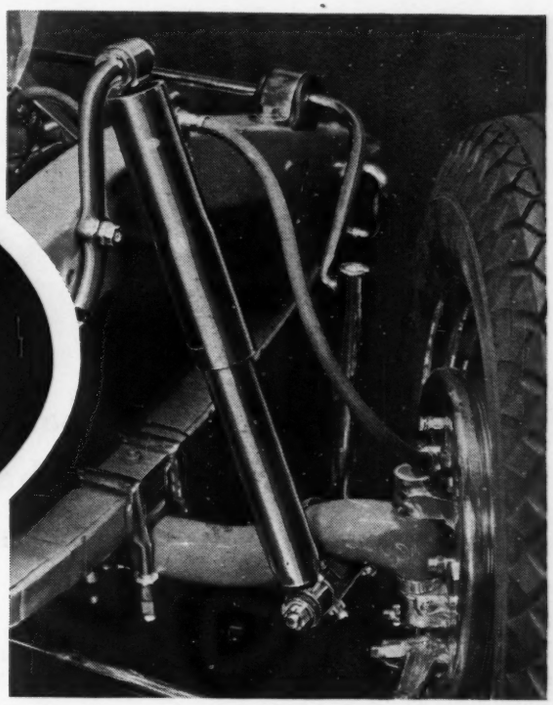
Two defroster louvers at the top of the instrument board are connected to a manifold and can be attached to the car heater whenever one is installed.

The new instrument board has the safety control buttons and, in addition, the lower edge has been raised, for the sake of safety.

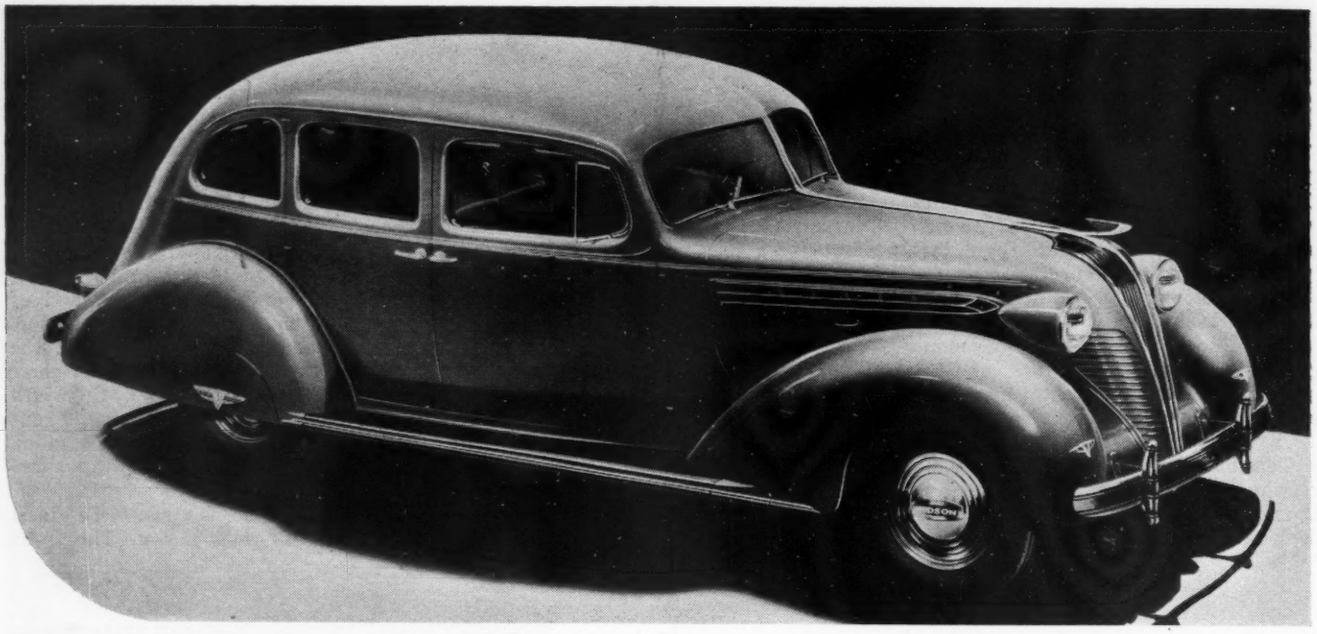
Body insulation has been improved to give better thermal and acoustic control with the all-steel construction. Insulating material is now used on the roof cowl side panels, floor panels, trunk floor, side panels and doors.

(Opposite page) Dodge bodies are of all steel construction and are mounted on rubber mountings of the out-rigger type. Spare tire equipment is carried back of the seat in a space also fitted out for small luggage on the Coupe





(Above) Details of the hypoid reduction gear and the ball bearing mounted pinion shaft. (Right) A new sway bar mounting and the direct acting shock absorbers are features of the front end



HUDSON

A Six on 122 in. Wheelbase - Two Eights on 122 and 129 in. Wheelbase - Selective Automatic Gearshift

THREE series of Hudson cars have been introduced for the 1937 season—two eights on 122 and 129-in. wheelbase chassis, and a six on 122-in. wheelbase, representing an increase of two inches in wheelbase over last year.

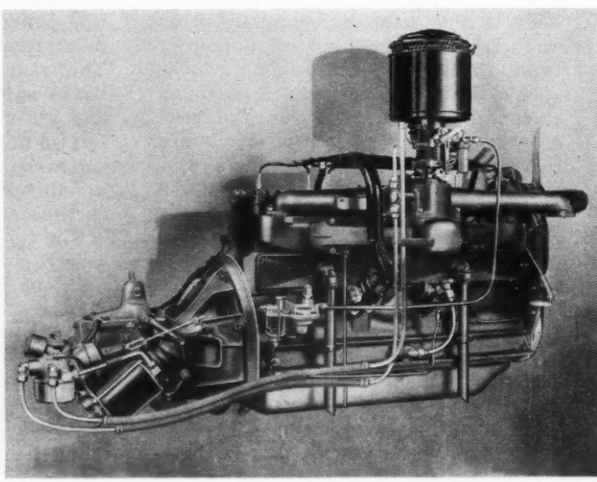
Bodies are entirely new and of all-steel construction with steel roof.

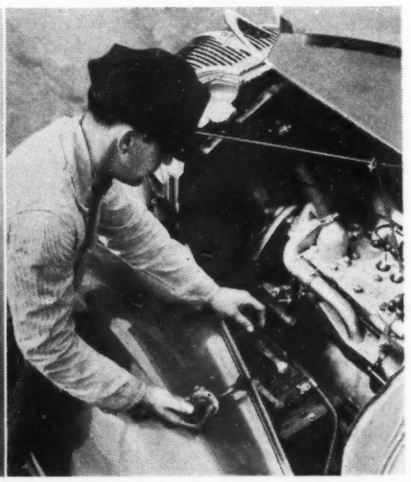
Both the eight and six on the 122-in. chassis are available in a complete line of body models, while the eight on the 129-in. chassis comes in two body types — sedan and touring sedan. Although overall height is two inches less than last year there is more head room.

Among the mechanical features, offered as options this year, are automatic clutch actuation, an automatic hill-holder, in the hydraulic braking system and the Electric Hand introduced by Hudson two years ago. The combination of the automatic clutch operating unit and the Electric Hand is termed by Hudson "selective automatic gearshift." This arrangement permits preselection of gears with not only full automatic clutch operation at all speeds but also automatic coasting at speeds below 15 m.p.h. This action is achieved by a centrifugal governor which permits automatic clutch action below the predetermined speed.

Mechanical features which are con-

(*Continued on page 31*)





(Top of page) The new Hudsons are 2 in. longer and 2 in. lower and the all steel bodies are 6 in. wider. The custom eight sedan is shown. (Below right) Air cooling is provided for the starting batteries which are now installed under the hood. (Below left) While displacement of the Hudson engine is unchanged power has been increased. Note the Electric Hand unit





WILLYS

Completely New Bodies - Standard Tread - 4 Cylinder, 48 hp. at 3200 r.p.m. Engine

WITH flowing lines revealing a sleekness ordinarily reserved for the highest priced cars, the 1937 Willys with a standard tread and longer and wider bodies, consists of a five-passenger, four-door sedan and a coupe, Standard and DeLuxe, with 56-in. standard tread and an overall length of 175½ in., longer than last year's model by 11½ in. Two commercial models, a cab pick-up and a panel delivery, are also offered.

Flanked by wide fenders, into which new "Eyeball" type headlamps are molded, the new car's rounded front offers no suggestion of a radiator. Rows of chromium-plated louvers, extending around the hood compartment help to conceal the vents through which air flows to the radiator core. The hood is hinged at the rear and affords access to the battery as well as the engine. The long, slanting rear deck panel houses the spare wheel and luggage compartment. Safety glass in all door windows are of the same dimension, making them interchangeable and simplifying replacements. The new models will be available in six standard colors of Dulux Synthetic enamel. The one-piece front seat is 50 in. wide and is adjustable. To afford greater foot room for the driver, the emergency hand brake has been placed under the cowl. Body construction is all steel throughout.

Unusual riding comfort and roadability are provided by double action, cylinder type shock absorbers. In addition, the front spring is 3 in. longer than on the former model and passenger weight has been more evenly distributed between the front and rear axles.

A new type Gemmer steering gear has replaced the old one. The front axle spindle bolts have been made larger to increase safety. The rear axle pinion shaft bearing is larger and the bearings have been placed farther apart to reduce bearing wear. Syncro-mesh transmission also is provided on both the Standard and De-Luxe models.

Bendix 9-in. duo-servo brakes are used. The rear brake cables have been placed inside of the frame rails to eliminate the hazard of tire chain interference.

The four cylinder 3⅛ x 4⅜ in. Willys-Overland engine, which develops 48 hp. at 3200 r.p.m., and which proved so successful in the model 77 is now fitted with the new Tillotson, variable type venturi carburetor with adjustable main jet. The fuel pump is also new to reduce possibilities of vapor lock.

Other features of this engine include exhaust valve seat inserts, interchangeable type main bearings,

(Continued on page 31)

CHEVROLET

New 85 Horsepower Engine—Improved Appearance—Lower Bodies—Hypoid Reduction Gears

A COMPLETELY new and larger six cylinder engine, lower all-steel bodies as the result of hypoid reduction gears, striking appearance, safety glass all around at no extra cost and many other refinements feature the Chevrolet offering for 1937.

The line comprises the Master with conventional springing and the Master Deluxe with the same type of knee action unit used in the past. Six body styles are available on each chassis.

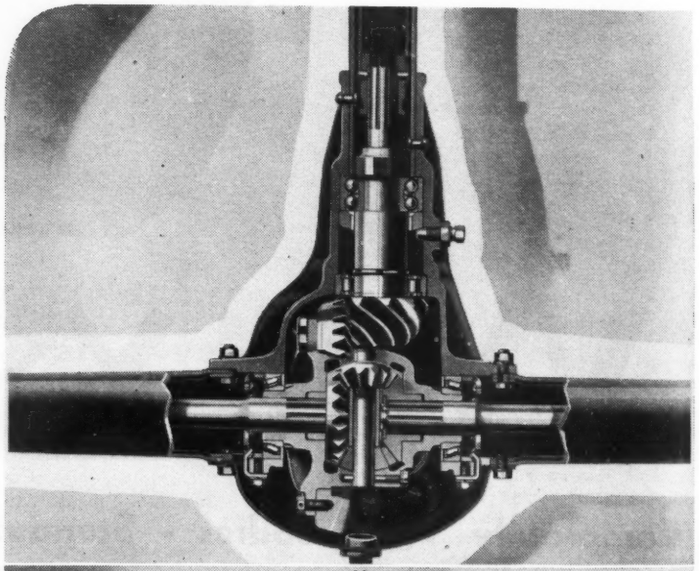
Features of the new body, aside from the all-steel construction, include greater visibility through wider windshields and larger windows; wider seats and completely new interior and exterior styling. Each model has commodious luggage space, either in a built-in-trunk or in a large luggage compartment behind the rear seat. In addition, each model has a package ledge at the top of the rear seat and a large compartment in the instrument panel.

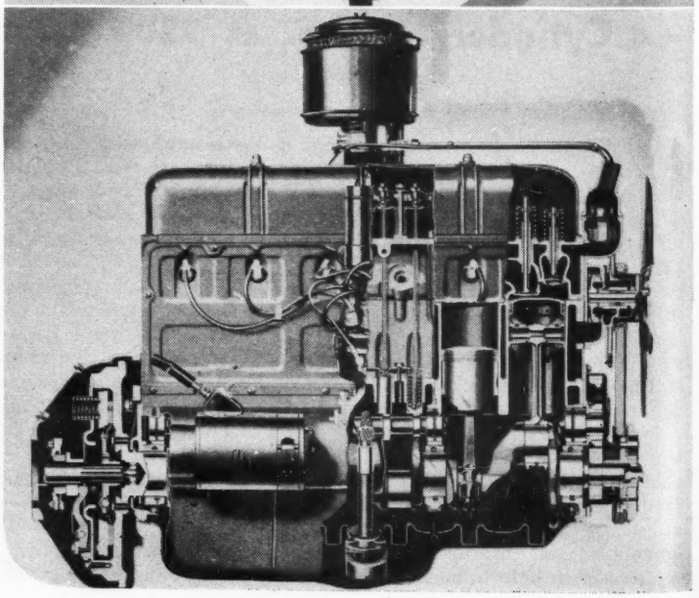
In the construction of the body, the steel turret top, double cowl, floor are formed into an integral unit by welding, without a single bolt or rivet being used.

The new engine which is used in all chassis models is of 3½-in. bore and 3¾-in. stroke, compared to 3 5/16 x 4 in. in the former engine. The displacement is now 216.5 in., compared to 206 cu. in. Compression ratio has also been increased to 6.25 to 1 and the engine develops 85 hp. at 3200 r.p.m.

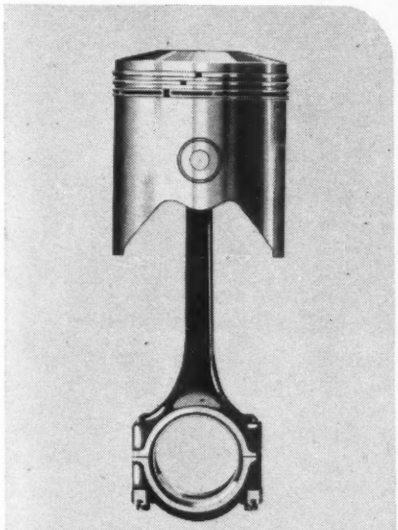
Four steel-backed babbitt bearings support the 68-lb. crankshaft, which is counterbalanced and fitted with a vibration damper. Three-ring, dome-head, slipper-type pistons are used, and the connecting rods are shorter and stiffer than heretofore. A gear-type oil pump replaces the vane-type unit used on the 1936 engine. Lubrication is of the circulating splash type. Manifolding has been improved to give better heat control in conjunction with thermostatic control.

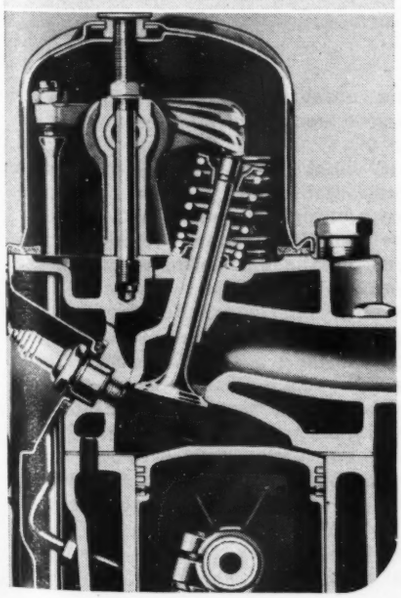
Both the transmission and rear axle are new. The synchromesh transmission is more compact and rigid. Improved cone clutches simplify the synchronizing mechanism and the shifter yoke now straddles the gears instead











(Opposite page, upper and lower) Details of the new rear axle with hypoid reduction gears. Sectional view of the new 3½ x 3¾ in. engine with four main bearing crankshaft. (This page, below) Rods are stiffer and pistons are of the slipper type. Rod bearings are lubricated by a scoop (not shown). The combustion chamber contour is unusual for an over-head valve engine.

of operating on the side only. The transmission case, torque tube ball socket, speedometer gear housing and rear support pad are cast in one piece. The torque tube, which is longer, is increased in diameter for greater strength. Tendency toward propeller shaft whip is reduced by re-spacing the propeller shaft bushings.

While the rear axle is unchanged in general design, the reduction is made through hypoid gears, thereby reducing the height of the propeller shaft 1½ in., which in turn permits lowering the frame and body. Differential side bearings are of the Hyatt roller type.

Other chassis units have been improved in detail. Bronze bushings replace the needle bearings at the upper and lower ends of the king pins. Rear springs have been reduced in length to 49 in. and are now mounted directly under the side rails of the box girder frame. The hydraulic brakes are continued without change.

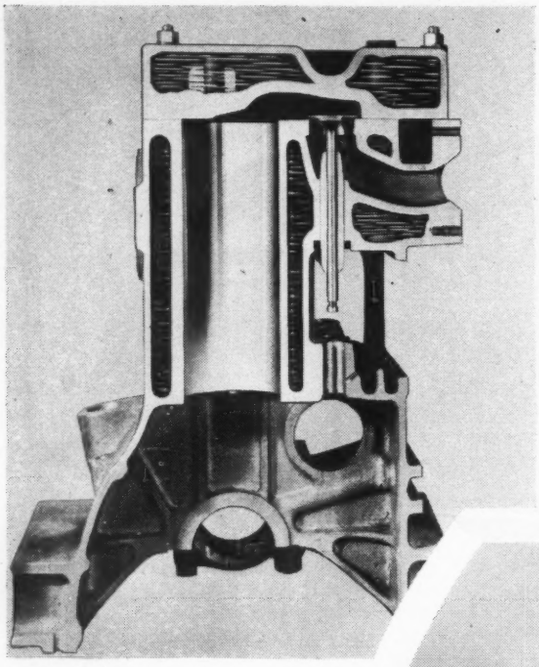
In addition to different front end suspensions, Master and Master Deluxe models are set apart by variations in equipment and trim. The Deluxe models have knee action instead of conventional springing at the front; double-acting shock absorbers front, single-acting rear, as compared with single-acting units front and rear; worm and sector steering instead of worm and straddle mounted sector. Exclusive features of the Master Deluxe series include a water temperature indicator on the instrument panel, rubber pads on clutch and brake pedals, instrument panel ash receiver, stainless steel molding on running boards, bumper guards front and rear, and a trumpet horn.

Both the Master and Master Deluxe are available in the sedan, coach, business coupe, sport sedan with trunk, and town sedan with trunk. The sport sedan with rumble seat appears in the Master Deluxe line only. The cabriolet with rumble seat is mounted on the Master chassis and finished with deluxe appearance features.

All the 1937 bodies are longer and lower. The lines are straighter and less rounded than previous models. Speedlines are used to emphasize the sleekness of appearance and an entirely new note is given by the highlighted speedline that extends from the hood into the body and doors. Both the windshield and the rear of the body slope more sharply. At the front end, the body is approximately 5 in. wider at the floor level and 1½ in. wider at the windshield, and 2 in. wider across the front seat.

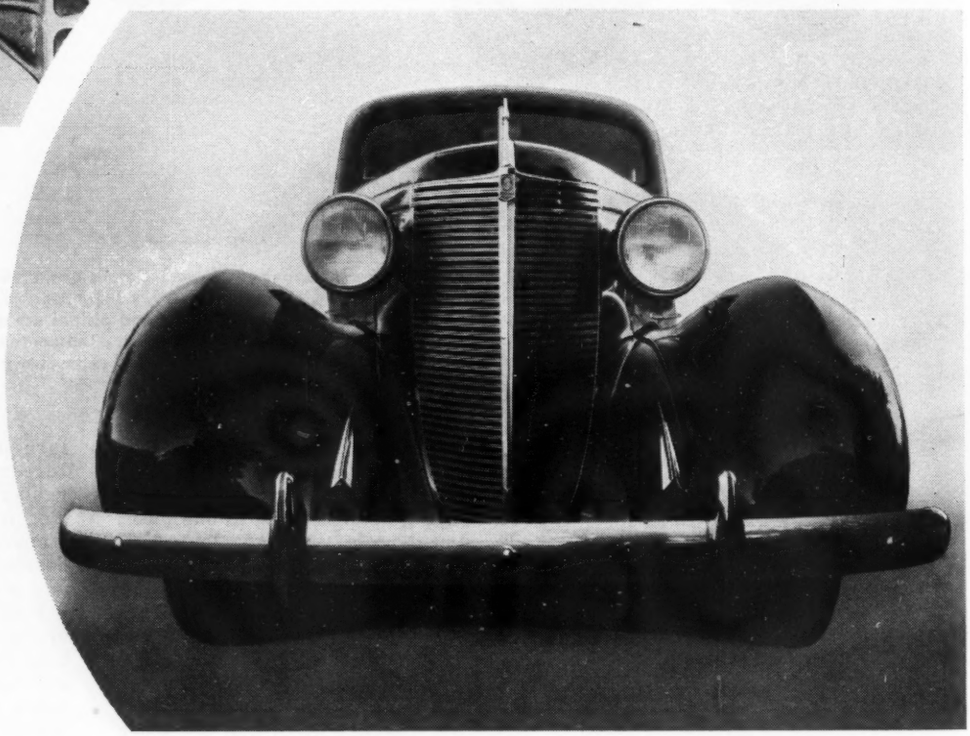
All floors and toe-boards are of steel and a foot rest is formed into the floor boards of the rear compartment. Trim hardware, molding finishes and equipment are all new. On the instrument panel, the dials have been grouped into a single unit, directly in

(*Continued on page 32*)



NASH

New Bodies—



(Above) Full length water jackets are continued as a feature of the Nash engines. (Right) Front view of the Nash-LaFayette 400

(Opposite page) Lines of both six and eight Ambassador series are similar. However, chrome fins on the headlamps and a streamlined grille ornament distinguish the eight from the six. The Ambassador eight sedan is illustrated

THREE lines of Nash and Nash-Lafayette cars are being offered by Nash Motors Co. for 1937, with price reductions on some of the models. Bodies for all three lines have been redesigned. The leading line is the Ambassador Eight, which has a 125-in. wheelbase and is equipped with an eight-cylinder, valve-in-head, twin-ignition engine of 105 hp. The base price on this line is $855. Next comes the Nash Ambassador Six with 121 in. wheelbase (4 in. less than last year) and a six-cylinder, valve-in-head, twin-ignition engine of 95 hp. Prices on this line start at $755. Last there is the Nash-Lafayette 400, which has a wheelbase of 117 in. and is equipped with a 90-hp. engine. This model is priced as low as $595 at the factory.

Referring to the new bodies, their comfort is enhanced by elbow recesses provided in the rear seats, by a relocation of the brake and shift levers in the driver's compartment, and by raising the rear section of the top. The transmission channel in the floor of the car has been eliminated.

A Nash-Lafayette innovation of last year, whereby a full-size bed could be made in that car, has now been extended to the Ambassador models, and the arrangement has at the same time been simplified.

All of the new models have ride stabilizers. The Ambassador lines are equipped with an improved synchro-shift transmission. On the standard Nash-Lafayette, where the horse power/weight ratio has been increased by increasing the engine output, the rear axle ratio has been decreased from 4.44 to 4.10, and all Nash models now have the same rear-axle ratio.

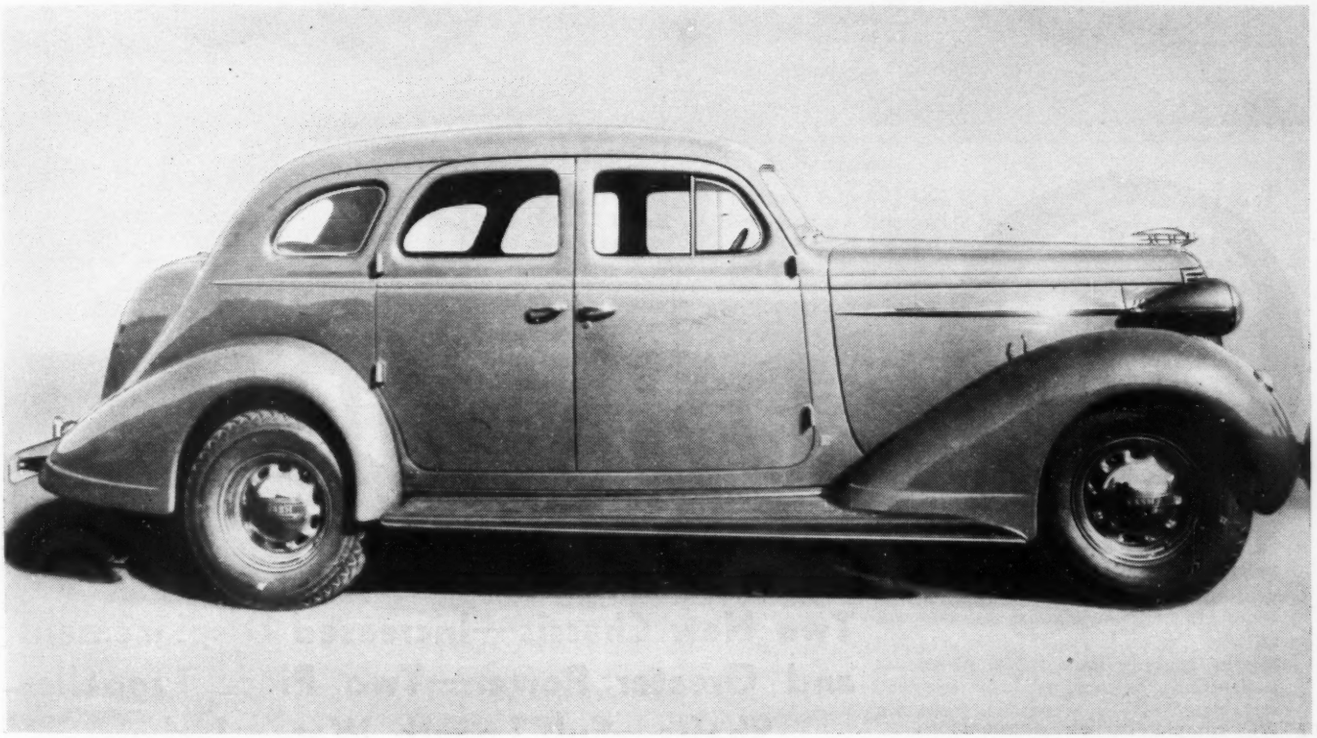
The overdrive is again being offered as an optional extra on Nash-Lafayette cars. Cars equipped with overdrive this year come with special speedometer dials which indicate not only the car speed in m.p.h., but also the engine speed with the car in overdrive.

A pilot light on the instrument panel indicates when the headlamp beam is high (for driving). Vents at the top of the panel provide for defrosting the windshield in case a car heater is fitted.

Body and engine features of the two Nash Ambassador models are substantially identical. Long "teardrop" headlamps are mounted in a high and forward position on the hood. Chrome fins on the headlamps distinguish the eight-cylinder model from the Six, another distinguishing feature of the Eight being the streamlined radiator ornament. The treatment of the rear trunks is also different on the two models.

LAFAYETTE

New Appearance—Increased Power



Running boards on the 1937 Nash-Lafayette cars are unusually long, and the entire rear half of the front fender is securely attached to the running board. A space left between the rear fender and running board facilitates draining and cleaning.

The windshield is of the divided V type. There are drip moldings over the window frames. Tops are reinforced by steel bows to prevent drumming. The luggage capacity of the Nash-Lafayette has been increased, and the tire compartment, which is separated by a shelf from the luggage space, permits removal of the tire without disturbing the luggage.

It is now unnecessary to remove the rear-seat back cushion when making up the bed. The back is hinged at the top and can be swung upward on braces, serving as a shelf for clothing, as Pullman berths.

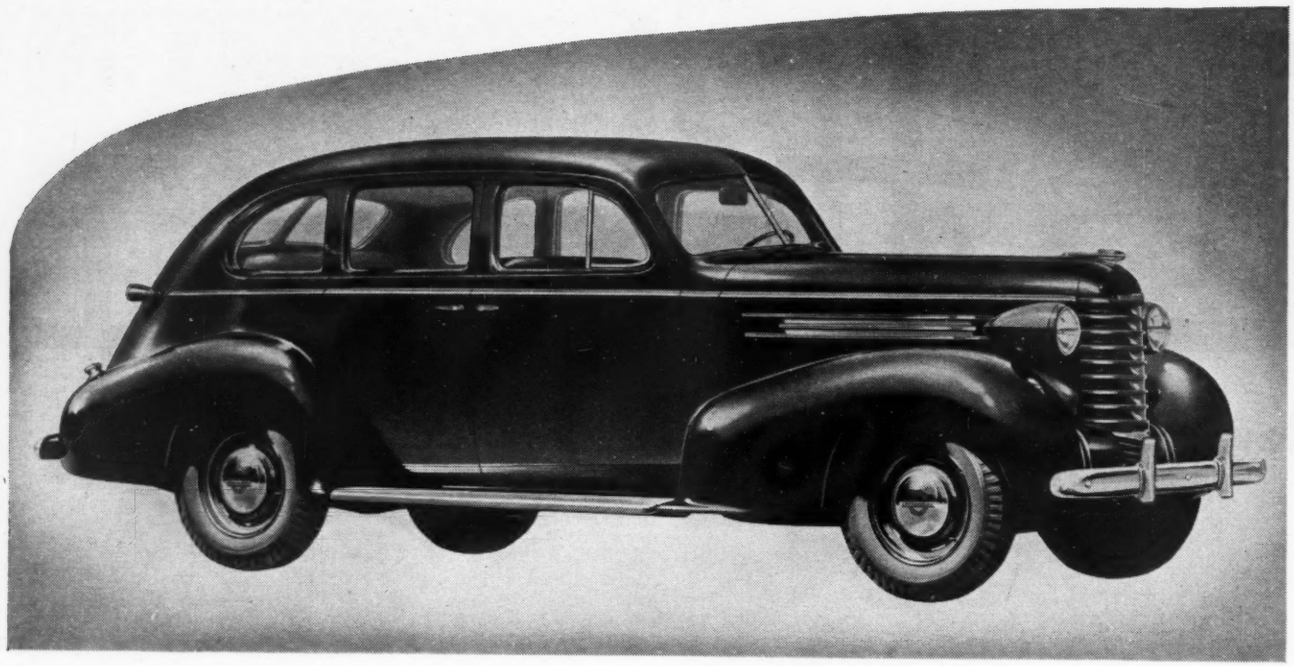
The license bracket is located centrally at the rear of the trunk. A light on the trunk serves the double purpose of illuminating the license and the luggage compartment.

Broadcloth upholstery is standard, but mohair is optional on all models. Window moldings are mahogany-grained. Interior hardware is of a new massive design, chromium-plated. Bodies of the Ambassador models measure 52½ in. in width at the front seats and 49 in. at the rear seat, thus affording ample room for six passengers. Head room also has been increased to 38 in. at the front seat and 39 in. at the rear.

Hydraulic brakes are standard on all models and a new brake lining is used. Steel disc and spoked wheels are obtainable at the car buyer's option.

A new engine mounting has been worked out for use on all models. There is a single support at the forward end, just below the fan bracket. The front mounting consists of two steel sleeves separated by a rubber sleeve, which assembly is interposed between the engine and the frame. The cylindrical form of the supporting members is claimed to allow the engine to rock freely, while the rubber cushion allows sufficient vertical movement to absorb vibration. At the rear the engine is mounted on two rubber biscuits, and these are well below the level of the front mounting.

Safety glass is standard throughout on all Ambassador models.



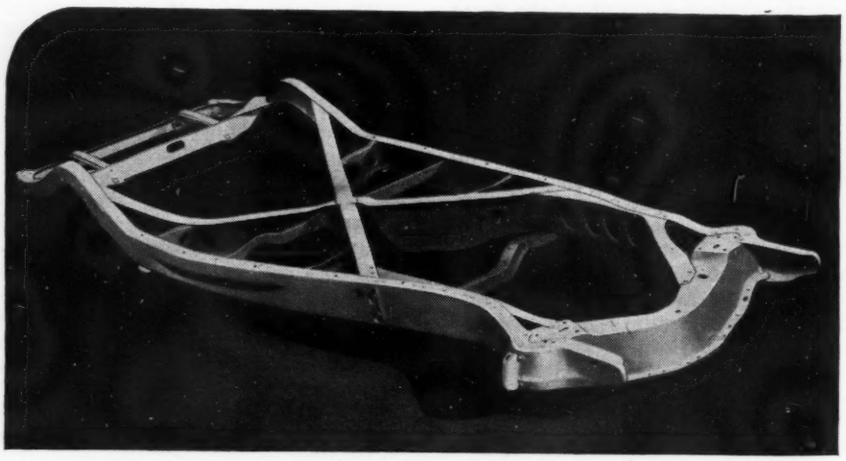
OLDSMOBILE

Two New Chassis—Increased Displacement and Greater Power—Two Piece Propeller Shafts—Full Length Water Jackets

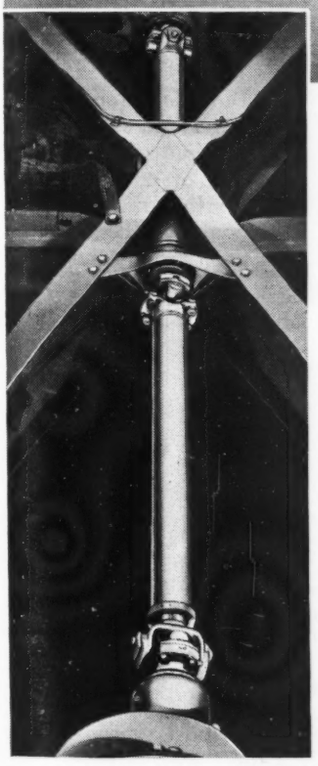
TWO completely new automobiles, featuring larger engines, increased wheelbase, two piece propeller shafts, I-beam X-type frames, new spiral type clutch facings and new bodies with individual and different styling for six and eight cylinder models are the high points of the Oldsmobile offering for 1937.

Taking up the mechanical improvements first, greater power of the six is the result of increasing the engine bore from 3 5/16 in. to 3 7/16 in., the stroke remaining at 4⅛ in. The new 229.7 cu. in. engine develops 95 hp. at 3400 r.p.m. In the case of the eight bore has been increased from 3 to 3¼ in., while the stroke was decreased from 4¼ in. to 3⅞ in. Power of the new 257 cu. in. eight is 110 hp. at 3600 r.p.m.

The new engines now feature full length water jackets with pressure cooling to the valve seats. As a result crankcase oil temperatures have been reduced from 225 deg. to 200





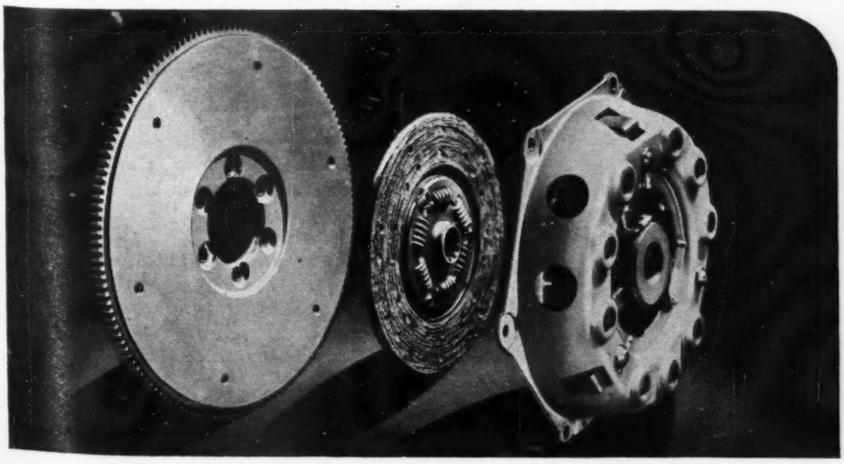


(Above) Wheelbase of the eight has been increased from 121 in. to 124 in. (Opposite page, top) Wheelbase of the six has been increased 2 in. to 117 in. (Left) Propeller shaft is now of the two-piece type, eliminating the tunnel in the rear floorboards. (Below) Clutches have been improved through the adoption of spirally wound lining. (Opposite page, bottom) Note the bracing of X-member which is now of I-section. Also note the form of the side rail.

deg. with attendant improvement in engine lubrication and cylinder, piston and valve life. In addition, thermostats limit water circulation to the engine until operating temperatures are reached. Water pumps are of the leak-proof ball bearing type, with non-adjustable packing.

Bearing surface of the four main bearing shaft used in the six cylinder engine has been increased 12 per cent. Five main bearings support the eight cylinder crankshaft. Main bearings in both engines are of the removable type and vibration dampers are used on each shaft. Four ringed anodized pistons are continued.

Downdraft carburetors, with anti-percolating devices, redesigned metering pins for greater economy, automatic choke control and fast idle during the warming up period are standard equipment.

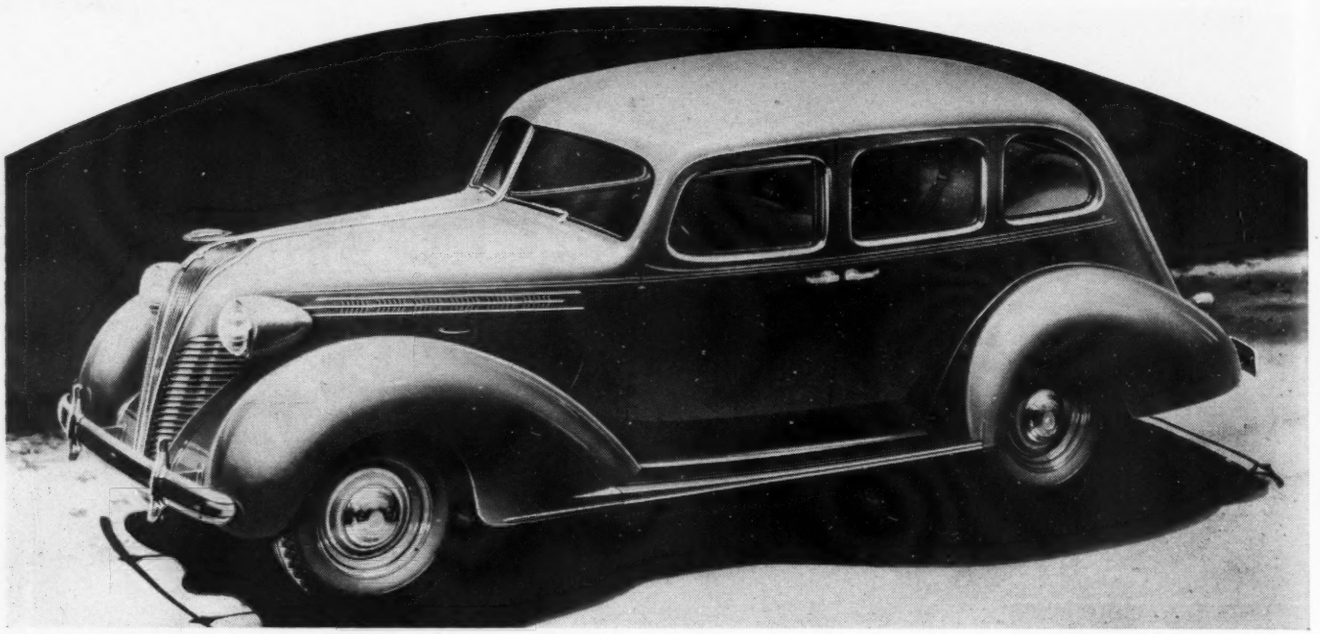


In addition to being increased in size, the single plate clutch is provided with a new type facing consisting of the friction material being wound in a continuous spiral from the inside diameter of the disk to the outside. More uniform friction and characteristics and greater durability are claimed for the design. Cushioning has been increased 50 per cent by means of strip steel springs placed between the facing and the center plate. A reservoir in the cast iron retaining ring surrounding the graphite clutch release bearing is filled with a non-liquid wax base lubricant, sufficient to last the life of the car. Clutch pedal effort is reduced by placing the steel return spring so that during the initial movement of the pedal it tends to return it. However, on further pedal movement, spring force is reversed and acts in the same direction of pedal movement.

Drive from the three speed synchromesh transmission which is continued with improvements to the semi-floating rear axle is through a new two-piece propeller shaft 2 in. in diameter. This shaft, which eliminates the tunnel in the rear seat floor boards and also permits lowering the body sills 3½ in., has three universal joints of the needle bearing type. Just in front of the center joint, the shaft is solidly mounted in a permanently lubricated ball bearing encased in a rubber collar to reduce noise.

The rear axle has been redesigned

(*Continued on page 32*)



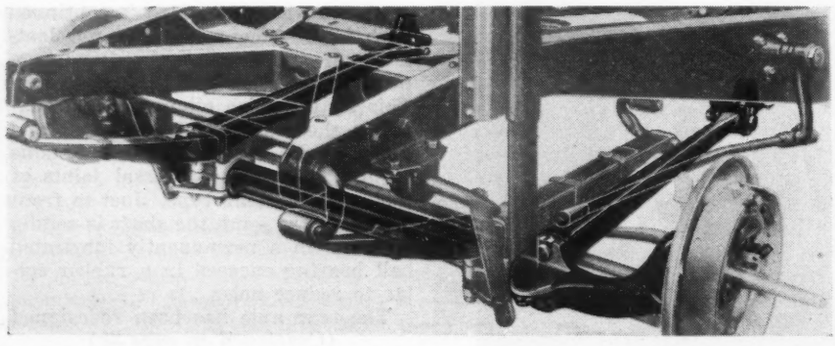
Wheelbase of the Terraplane (above) has been increased from 115 in. to 117 in. (Bottom of page). Details of the radial safety control. The arm has been slightly shortened and the pivot pin at the axle end eliminated.

TERRAPLANE

Wider Bodies—Stronger Frame—Greater Power

A NEW Terraplane Six in Deluxe and Super models on a chassis of 117 in. representing an increase of 2 in. with wider and roomier all-steel bodies is offered by Hudson Motor Car Co., for 1937. Although retaining the general lines brought out last year, the sheet metal treatment at the front has been restyled with deeper front fenders, shell mounted headlamps, and a new stainless steel radiator grille flanked by horizontal louvers.

To accommodate the 2 in. wider bodies, Hudson provides a new double drop frame with two X-members, the whole being welded at 142 points. The steel underbody which holds the body to the frame at 38 points adds greatly to the torsional rigidity of the entire structure. Included among the options this year are the Electric Hand and an automatic clutch operating unit. These two units in combination with a governor provide what Hudson has termed their selective automatic shift transmission. Other options include the Hill-holder which in conjunction with the hydraulic braking system keeps the car from rolling backwards on hills.

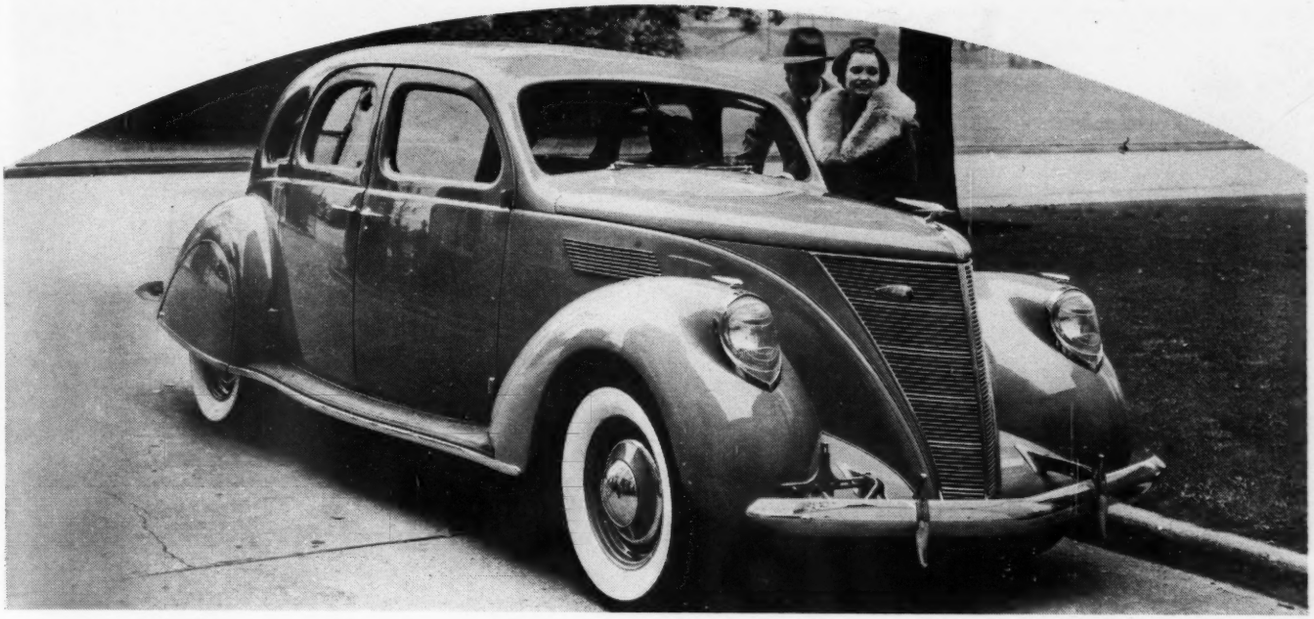


While the powerplant remains the same so far as mechanical specifications are concerned, horsepower has been increased and performance greatly improved by changes in carburetion and manifolding.

The six-cylinder 3 x 5 in., 212 cu. in. displacement Terraplane engine is offered in two distinct types. On Deluxe models, the engine is fitted with the Carter single throat carburetor as last year and is rated 96 hp. with 6.25 to 1 compression ratio and cast iron head, an increase of 8 hp. The same engine fitted with an aluminum head with 7 to 1 compression ratio, delivers 102 hp. A hand-operated choke is standard on Deluxe models.

On the Super models, the engine is fitted with the new Carter double downdraft carburetor and new manifolding which boosts the rating of the engine to 101 hp. with the standard iron head and compression ratio of 6.25 to 1. When fitted with an aluminum head having compression ratio of 7 to 1, this engine is rated 107 hp. Despite better acceleration and increased top speed, gasoline economy has been improved.

(*Continued on page 32*)



ZEPHYR

New Front Axle—Improved Steering—Smarter Appearance

THE 1937 Lincoln Zephyr models have substantially smarter appearance, pleasing improvements in interior design and a few mechanical refinements including a new steering system and a newly designed luggage compartment.

The new frontal appearance is the result of a distinctive sharp nosed radiator grille topped with its flying wing and ornamented with horizontal stripes of chromium. Similar stripes border the hood louvers and a body stripe is carried the full length of the car, below the belt line.

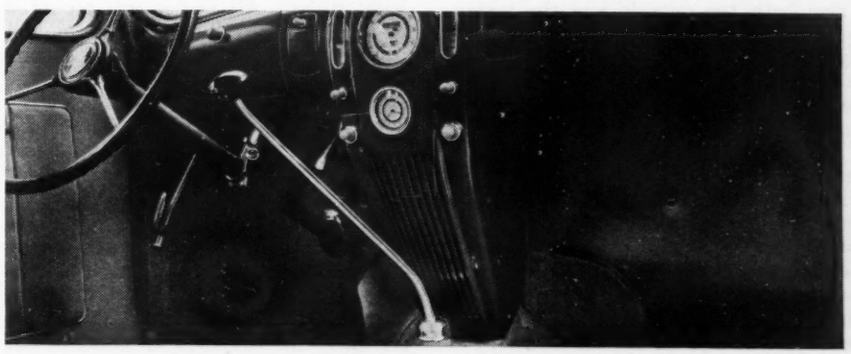
Probably the most striking feature of the car interior is the instrument panel design which includes a new enclosed grille reaching down to the top of the transmission housing and designed to screen the installation of car radio and heater. Both panel and grille are finished to match the body color.

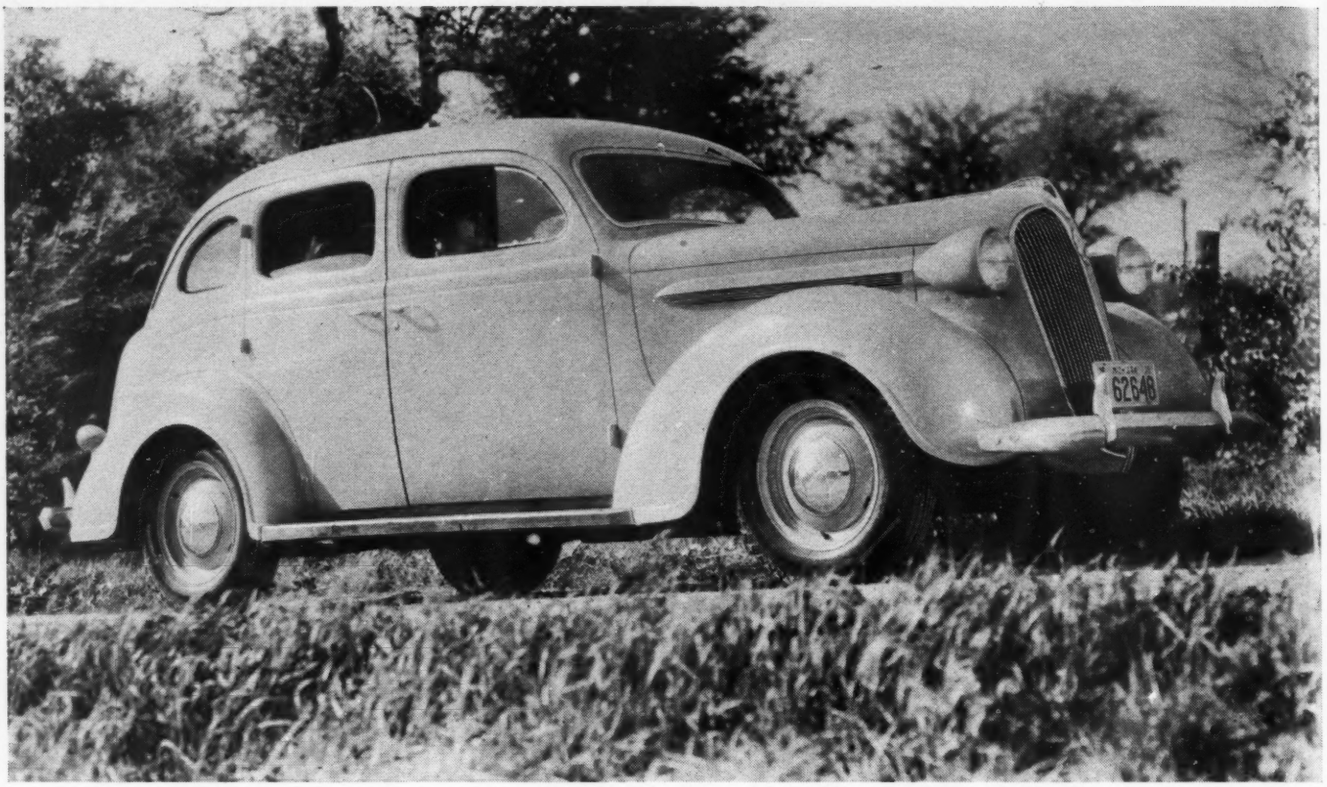
The new arrangement of the luggage space is the most important improvement in body structure design. The compartment is reached through the rear deck hatchway. When the deck is lifted, the spare tire is revealed. This can be swung down giving access to the luggage space.

In the steering system, a new front axle center of heavier section is found. Caster angle has been reduced while the gear ratio has been increased to 20.2 to 1. The gear housing has also been redesigned. The transverse steering stabilizer, which was introduced during the past selling season, is continued. This holds the front axle in definite relationship to the body by a transverse radius rod paralleling the transverse drag link. This combined with a similar transverse stabilizer at the rear materially improve the steadiness of the car on rough roads. Engine changes include a more quiet camshaft, internal ribs bridging cylinder head bosses and a more quiet fan with alternate long and short oval shaped, pointed blades.

(Top of page) Detailed improvements feature the 1937 Lincoln Zephyr

(Below) The grille descending from the instrument panel is designed to screen the installation of car radio and heater





PLYMOUTH

Rubber-Poise Mountings for Bodies—Hy

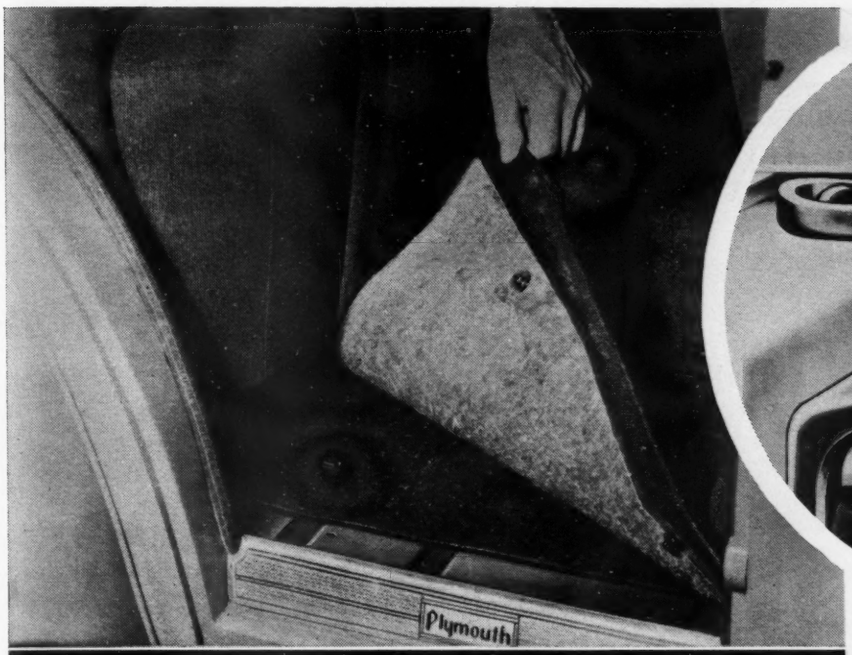
AMONG improvements in the Plymouth for 1937 are the adoption of a hypoid-gear rear-axle drive to eliminate the tunnel in the rear compartment; an increase in body size and body mounting on rubber cushions on outriggers; the elimination of potentially dangerous projecting parts from both the outside and the inside of the bodies, in the interest of safety; the adoption of direct-acting shock absorbers; better noise and heat insulation, and improvements in the steering gear and the ventilating system.

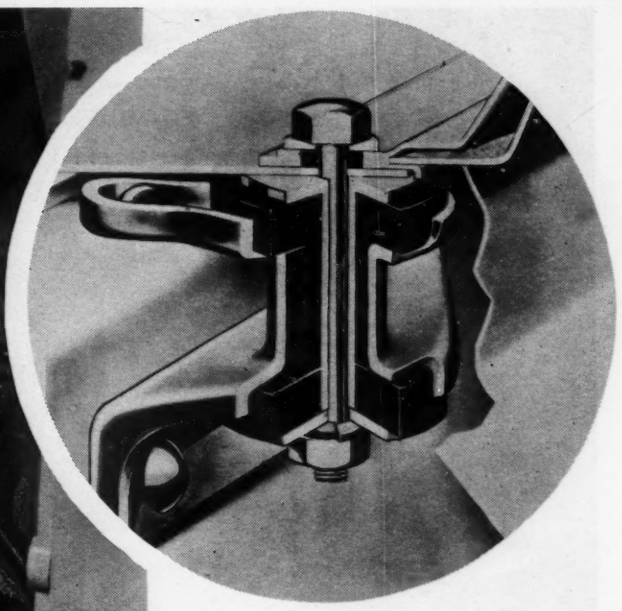
Particular emphasis is laid on the increased size of the bodies, made possible by the outrigger mounting and a wider tread. Front seats are 3 in. wider and rear seats 2¼ in. The new seamless steel roof provides 1 in. more headroom without increase in car height. The overall length has been increased to 194 in. for all models.

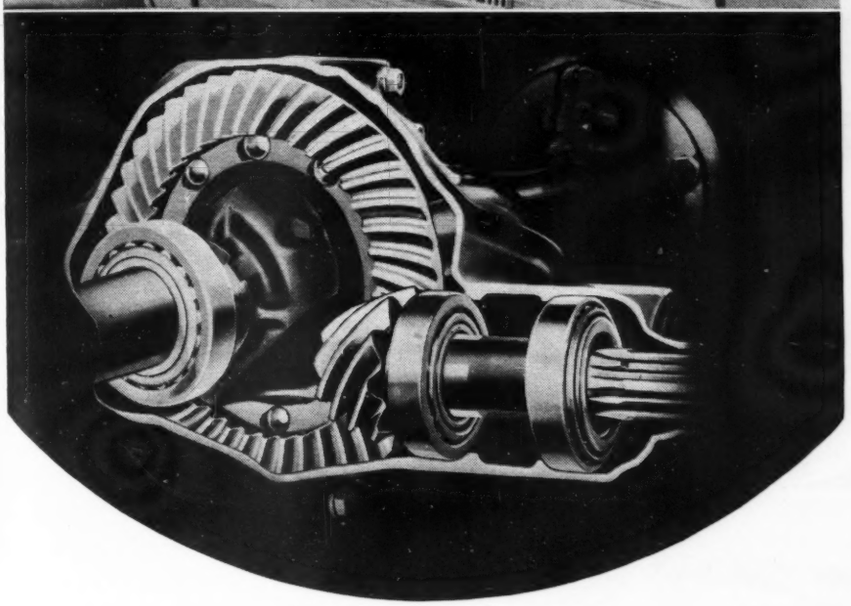
The Plymouth line now includes three "business" and eight "deluxe" body types. All bodies are mounted on chassis of 112-in. wheelbase and fitted with 82-hp. engines. All sedans now have either trunks or luggage space accessible from the back of the car. Spare tires are now being carried inside on all models—in coupe models behind the passenger-seat cushion.

Defrosting or anti-frost vents are built into the bottom of the windshields in front of both driver and passenger. Provision is made for an extra loud speaker for the rear compartment, in the back of front seats. The rear license plate has been moved from over the tail light to a recessed bracket at the middle of the trunk lid and is now provided with a separate lighting fixture.

Even more extensive changes have been made in the interior of the bodies with a view to enhancing the safety of the cars. Starting at the front, throttle, choke and light switch are so arranged that they disappear on special slides in the rounded base of the new panel, and even the switch key is recessed. The flat panel is raised above knee height, and the windshield crank folds into the smooth, round dome.







(Opposite page) Front and rear seats are 3 in. and 2¼ in. wider respectively. Bodies, including roof are all steel.

(Above) Details of the new body mounting, which supports the body on rubber without compression from body bolts.

(Upper left) Five different kinds of insulation, including rubber are used on the new Plymouth to block out rumble and drumming.

(Lower left) Adoption of hypoid rear axle reduction gears permit lower body heights and the elimination of the tunnel in the rear floor boards.

poid Rear Axles—Improved Body Insulation

Inside door handles also curve inward, eliminating projections. Backseat passengers are protected by a padded roll across the front seat.

Bodies still follow the contour of the frame, but instead of being set directly on the frame, they are mounted on brackets with rubber cushions. These rubber cushions merely support the weight of the body and are not compressed by the body bolts.

Direct, double-acting shock absorbers are now fitted, and are mounted at an angle so as to minimize swaying when rounding corners. As compared with the shock absorbers formerly used, the new ones have greater oil capacity and larger valves, and they work at much lower oil pressures. The tread has been increased to 60 in. In the steering mechanism, the king-pin angle has been reduced from 9 to 4 deg. This, together with a number of mechanical improvements in the steering gear, is claimed to have reduced the steering effort required by 20 per cent and eliminated the tendency of the car to "wander."

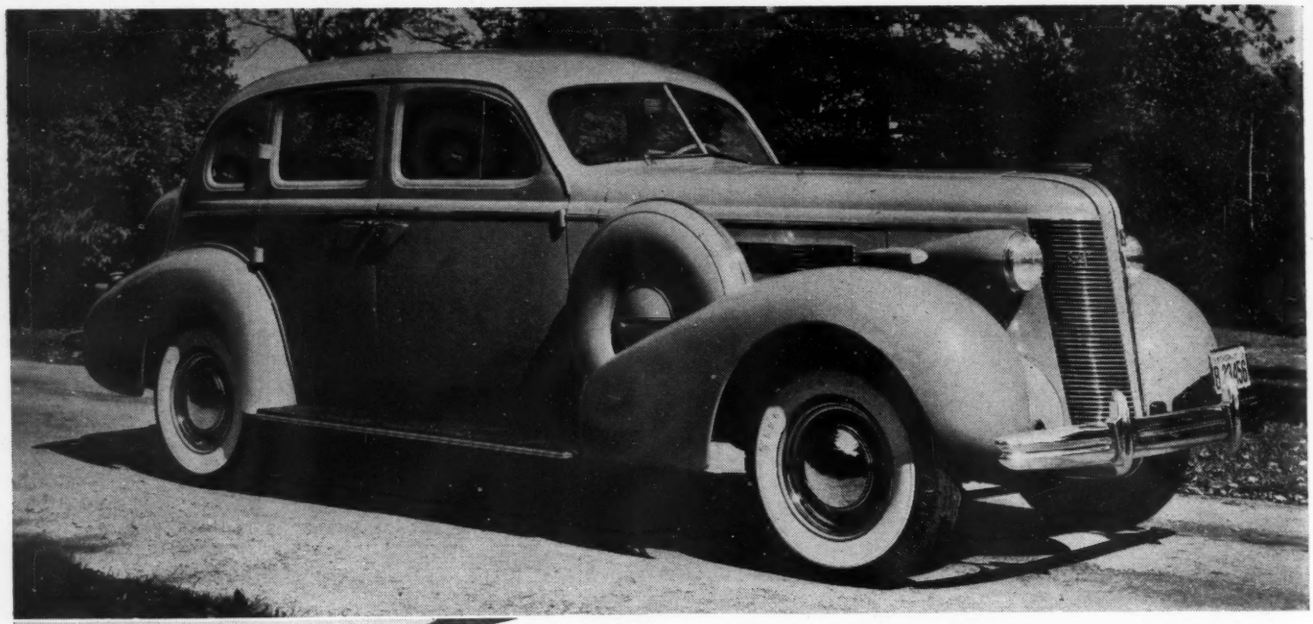
Noise elimination was made the subject of a special study by Plymouth engineers, and five different insulating materials are used. Wafflex takes care of sound absorption and heat insulation in the one-piece steel roof and cowl. Cordex protects the floor, with the addition of asphalt-impregnated felt in front near the engine. Silento prevents the side panels from acting as sound boards, and deck lids are lined with a sound deadener which is sprayed on in liquid form.

Improvements in the ventilating system include "clear-vision" butterfly vanes in front-door windows of deluxe models. When the rear section of the window is lowered, vision is not obstructed by any metal moldings. Rear-quarter windows on deluxe four-door sedans also swing outward on friction pivots, the control being the same as that for the front-window vanes.

The six-cylinder L-head engine remains generally the same, but it is now fitted with U-slot anodized pistons which are said to be quieter in operation and to have longer life.

With a compression ratio of 6.7, the engine develops 82 hp.

By the use of a hypoid-gear final drive the need for a propeller-shaft tunnel in the rear compartment has been eliminated. The whole chassis is now better sealed to prevent oil leakage, and there are fewer places to lubricate. All bodies, fenders and other sheet metal parts are rust proofed. Bodies are finished in the high color enamel introduced last year. Standard colors include black, Plymouth blue, Middy blue, gunmetal, aquamarine, and Plymouth beige.

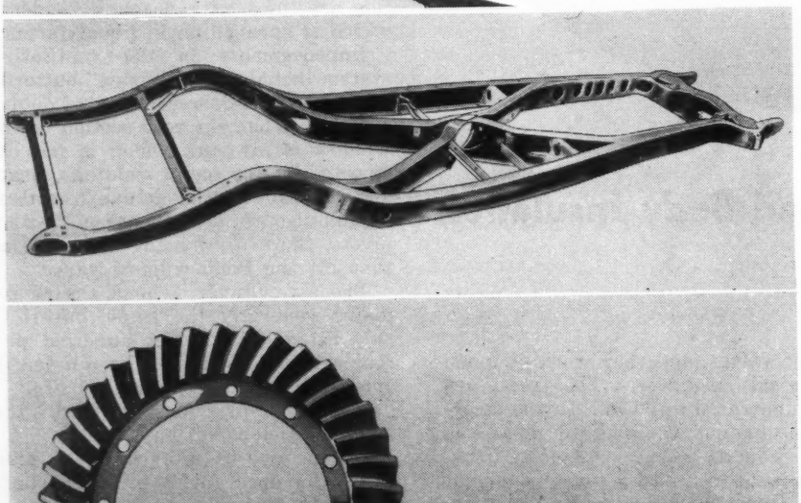


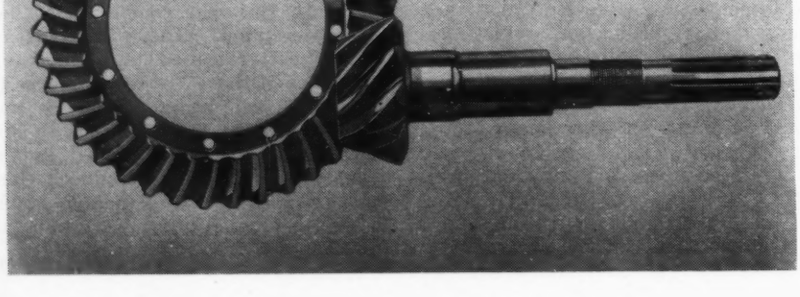
The lines of this series 60 sedan are typical of the 1937 Buick series.

Below, I-beam X-members are a feature of the new Buick frame.

Bottom, hypoid rear axle gears are used on the series 40 and 60 Buicks.

BUICK



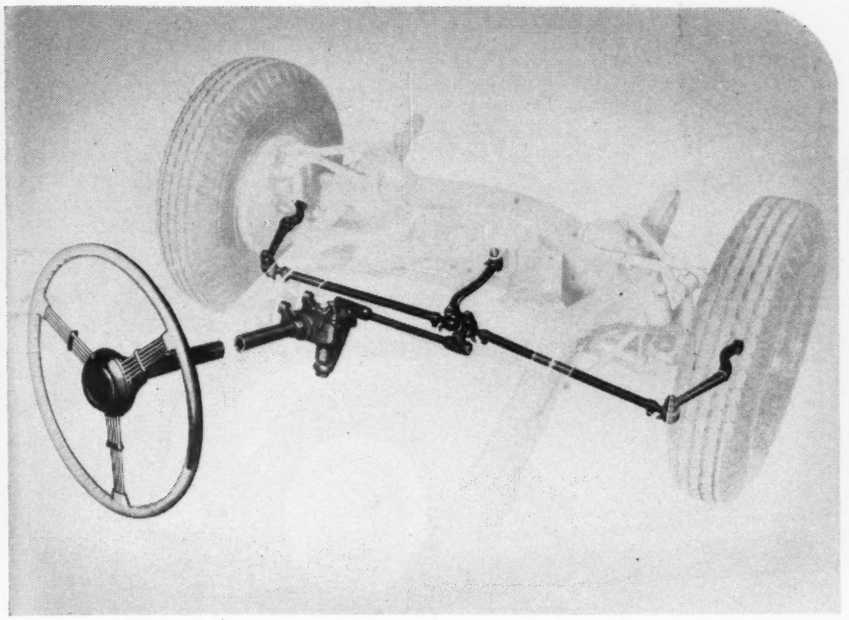


HYPOID rear axles, new frames with I-beam X-members and engines increased in size from 3 3/32 x 3⅞ to 3 3/32 x 4⅛ in. for the series 40; improved performance, greater comfort and new distinctive front end treatment for all lines, feature Buick's offering for the coming year.

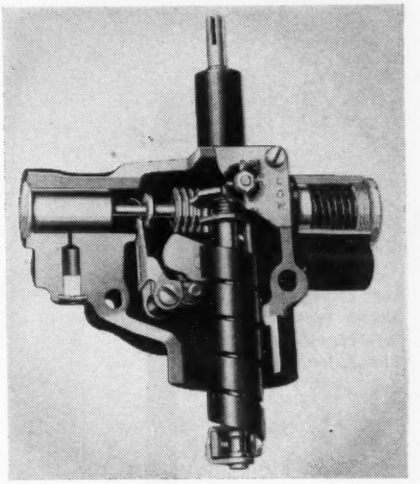
All four lines have the same characteristic front end styling with two piece radiator grille with horizontal bars, unique tailoring of hood top and sides and head lamps faired directly into the deep radiator shell. The Series 80 and 90 continue the same features mechanically as before, but with the improved performance and riding ease previously mentioned.

Details of the hypoid rear axles used on the two smaller cars are brought out in one of the illustrations. While lubrication instructions are not available at the time of going to press, special extreme pressure lubricants are understood to be required as is usual with this type of gear.

To reduce the possibility of lubri-



Hypoid Rear Axles - I-Beam X Members - Wheelbase on Series 40 & 60 Increased 4 In.



(Top of Page) A new steering system is found on the 1937 Buick cars

(Above) Cross section of the Buick Choke

cant reaching the brakes, two leather oil seals are now used at each wheel. On the Series 90, the rear end of the propeller shaft has been reduced in diameter and is supported by a bearing in the torque tube about 7 in. from the axle housing. The design, in addition to reducing unsprung weight, reduces the possibility of propeller shaft whip.

By increasing the displacement of the Series 40 engine from 233 cu. in. to 248 cu. in., raising the compression ratio from 5.65 to 5.7, adopting T-P streamlined intake valves and a new straight through type muffler with larger tail pipe, power in the Series 40 has been increased from 93 hp. to 100 hp. at 3200 r.p.m.

The 3 7/16 x 4 5/16 in., 320.2 cu. in. Series 60 engine, which is used on the Series 60, 80 and 90 chassis, retains the same dimensions as last year. However, output has been increased 10 hp. to 130 hp. at 3400 r.p.m. as the result of raising the compression ratio from 5.45 to 5.75 to 1 and the adoption of a new muffler and intake valves. New dual downdraft Stromberg carburetors are also found on both engines and contribute to the increased power. A double float is provided to insure adequate fuel reaching the jets under all driving conditions. A new automatic choke is also provided. This is attached directly to the carburetor and operates the choke through a flexible shaft encased in rubber conduit. A two-point adjustment is provided for low and high octane fuels.

The special oil temperature regulator incorporated in the rocker arm shaft of the Series 60 engine has been discontinued in favor of aluminum rocker shaft brackets, so designed that they serve as an automatic thermostat controlling valve clearance under operating conditions. Rocker arms have also been redesigned to achieve better oil control.

The anodized pistons are continued with a heat deflection curve above the top ring. Rings have been increased 1/32 in. in width and have a 0.0005 in. tapered face for quick seating.

The oil filter has been discontinued. Instead, Buick uses a new floating oil pump screen arranged so that oil is drawn only from the top of the supply.

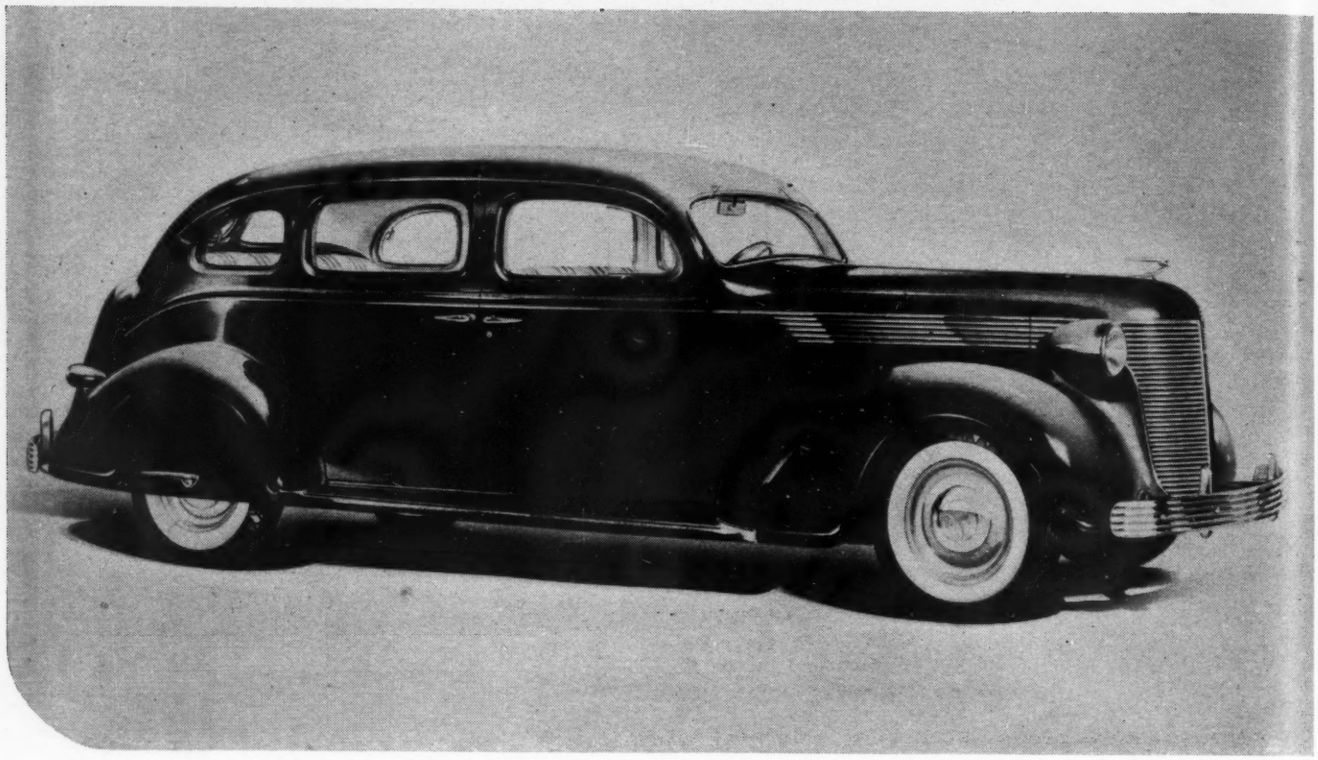
The diameter of the Long clutch used in the Series 40 has been increased to 10 in. to take care of the increase in power. The size of the clutch used in the larger chassis remains the same. However, the disk is thinner and is still further lightened by perforations for improved shifting. Transmissions have detailed improvements.

Series 40 and 60 frames are new and feature the welded I-beam section X-frame member, increasing torsional rigidity over 100 per cent. The new frames have curved side rails which follow the body contour and eliminate the conventional body brackets.

Design of the independent suspension system remains fundamentally the same but with detailed changes. On the Series 40 and 60 there is a new control arm forging with I-beam section. On the 80 and 90, the lower arm is now of I-beam section.

Sway bars are now used both front and rear and result in not only an improved ride but also better steering. The steering gear is now of straddle mounted type with a double

(*Continued on page 31*)



De Soto

Hypoid Axles—Nine Body Styles

IMPROVEMENTS made in the De Soto for 1937 include appearance, safety and comfort features. The new line, built on a chassis of 116 in. wheelbase and 199 in. overall length, is available in nine body types, including a four-door touring sedan with trunk, a four-door sedan with luggage compartment, a two-door touring brougham with trunk, a two-door brougham with luggage compartment, a business coupe with rumble seat, a business coupe with rear luggage deck, a convertible coupe with rumble seat, a convertible sedan, and a seven-passenger sedan.

Insulation of the body has been improved. New-type body mountings, direct-double-acting hydraulic shock absorbers, an improved steering hook-up, a new ride stabilizer and a forward shift of the seats combine to improve the riding qualities. Body-mounting brackets are riveted to the frame, and the body is bolted to these brackets, but rubber insulators prevent metal-to-metal contact. The body bolt is also rubber-insulated. A steel spacer is incorporated in the mounting so that the bolts can be tightened only to a predetermined degree. This type of body mounting is intended to prevent road noises from being transmitted from the frame to the body.

The direct-type of shock absorbers are insulated from both the springs and the frame by rubber bushings. A large volume of oil and large valves keep down the working pressure and side sway is controlled by mounting the shock absorbers at an angle. A new ride stabilizer is mounted at the front end by rubber bushings and washers and steel brackets to the under side of the frame and connects by links to the front spring seats on the lower control arms of the independent-suspension units. It is independent of the shock absorbers. A pantograph type of independent front suspension is used.

There are individual tie rods between the steering arm (or pitman) and the knuckle arms. Tie-rod connectors are sealed with leather to keep out dirt and moisture. The knuckle-pin angle has been reduced from 9 to 4½ deg. to render steering easier. Front-wheel spindles have been increased in diameter, and larger inner wheel bearings are used. The

rear-wheel tread has been increased to 60 in.

Front seats, which now measure 47 in. across, are wider and may be moved 2 in. forward and back from their central position. The width of the back seat has been increased to 48½ in., and additional leg room is provided by a foot rest recessed into the back of the front seat. Lower floors give more head room permitted by the installation of hypoid rear axle reduction gears.

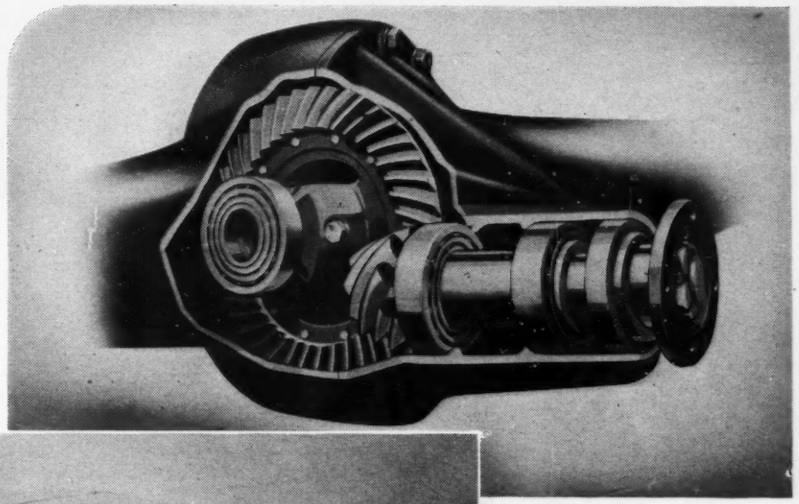
Engines have the same bore (3⅜ in.) but one-quarter-in. less stroke (4¼ in.) than last year, and the piston displacement is now 228 cu. in. The standard compression ratio has been increased to 6.5 and the engine rates 93 h.p. at 3600 r.p.m. An aluminum cylinder head with a compression ratio of 7 is available. New engine features include larger valves, improved porting, symmetrical connecting rods, U-slot aluminum alloy "anodized" pistons with four rings, austenitic-steel exhaust valves, an improved oil filter, an air filter with removable filter element, and self-locking tappet-adjustment screws.

There is a ball release bearing with a new Oilite ball retainer on the 10 in. clutch. The bearing is "pre-lubricated" and requires no lubricating attention in service.

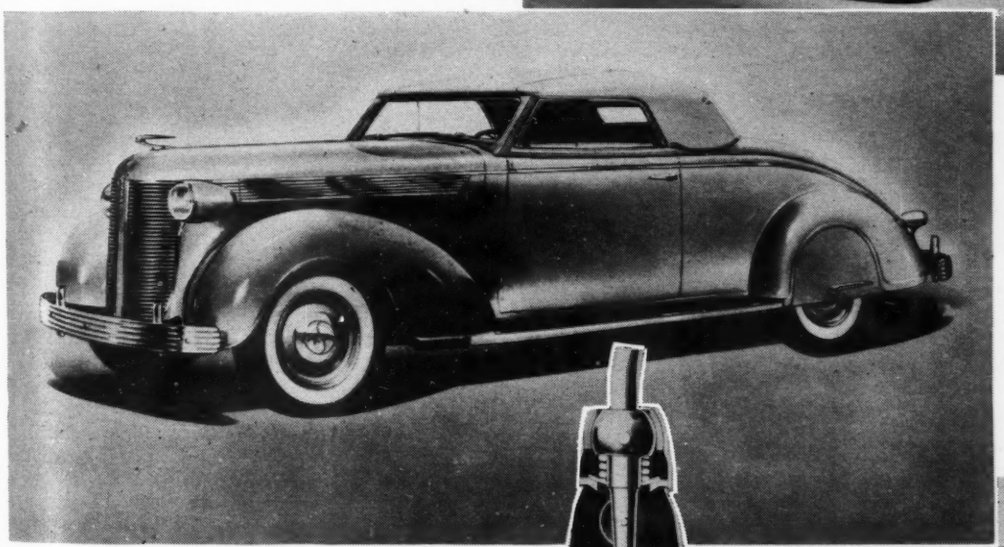
An overdrive is available and when supplied is in a separate case at the rear of the transmission. There is then a ball bearing between the two units, which provides better support for the main shaft. The overdrive engages automatically at between 35 and 40 m.p.h. The "Syncro-silent" transmission, with all helical gears, now has a roller on the second-speed shifting rail.

The new hypoid rear axle lowers the propeller shaft and allows a low level floor in the rear compartment. The standard rear axle ratio is 4.1. With overdrive a ratio of 4.3 is used, which gives a final-drive ratio of 3.11 in overdrive.

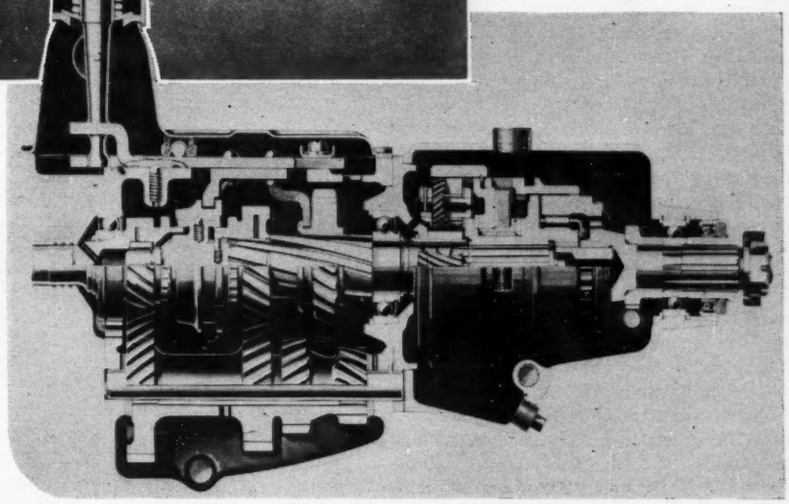
The center section of the X-type frame has been provided with rolled edges to make it stronger, and there are now braces between the side rails and the X-member. All bodies, fenders and other sheet metal parts are rust-proofed before painting.



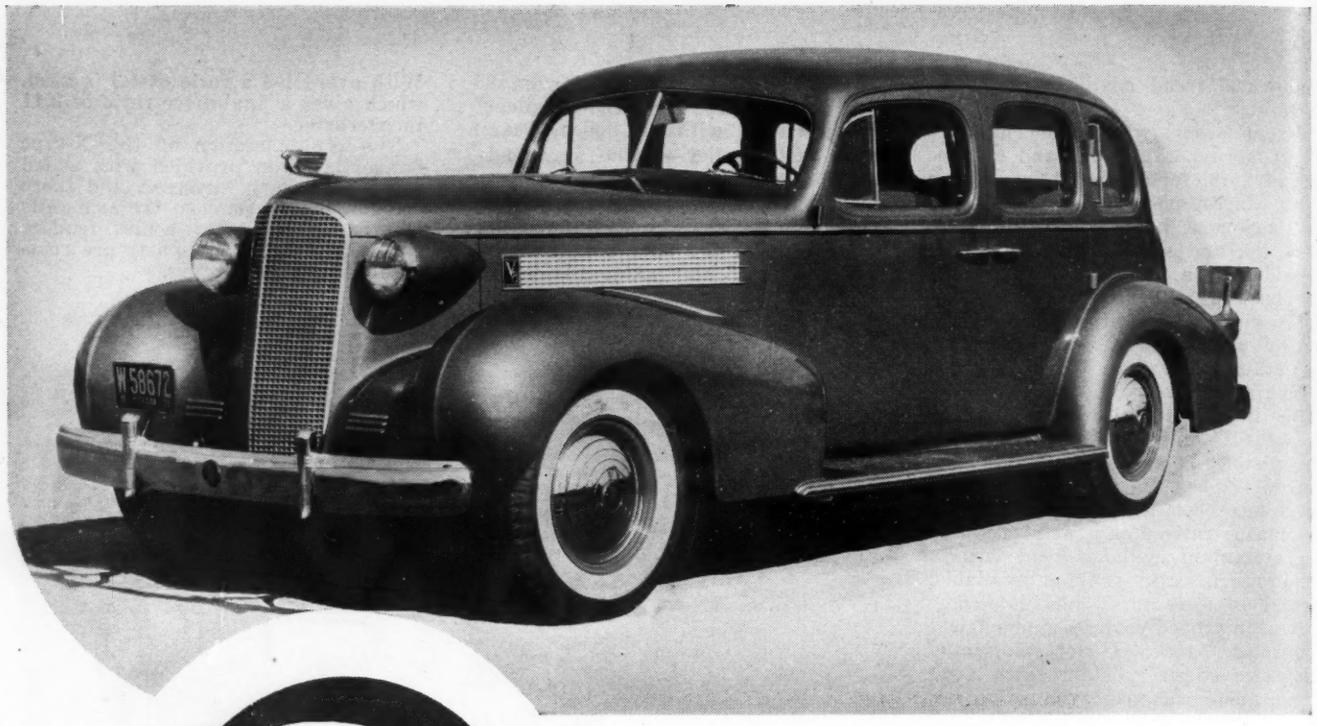
Adoption of hypoid reduction gears (above) result in lower overall height and elimination of tunnel in rear floor boards



A seven-passenger sedan (opposite page) on a 133 in. wheelbase is available. Standard wheelbase is 116 in. (Above) Convertible coupe with rumble seat



(Below) A ball bearing between the transmission and overdrive units now affords better support for the mainshaft.



CADILLAC

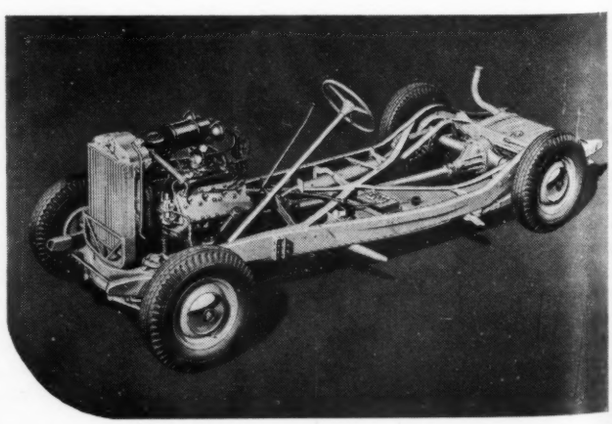
New 322 Cu. In. V-8 Engine in LaSalle—

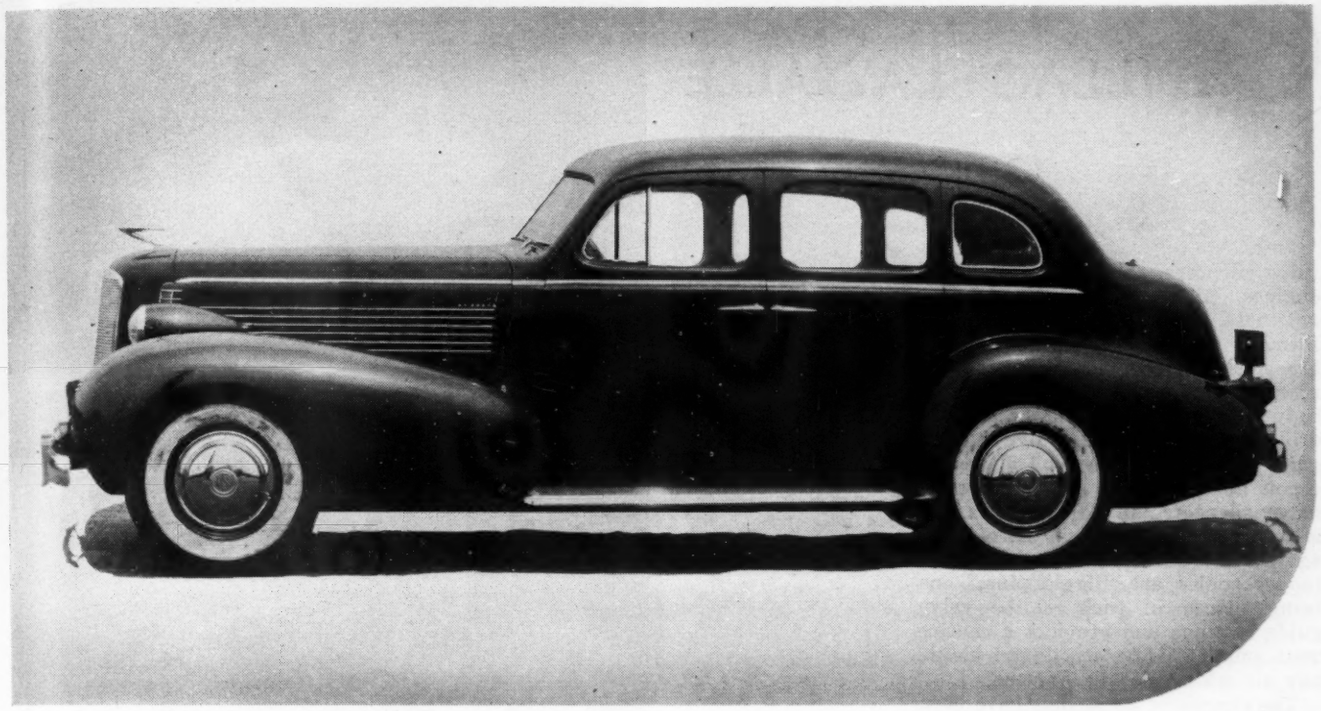
SEVEN chassis models and thirty standard body types, 20 of these by Fleetwood feature the Cadillac and LaSalle lines for 1937 season. The most outstanding development is the adoption of a V-8, 3⅜ x 4½ in. engine for the LaSalle, being an improved model of the former Series 60, V-8, replacing the straight eight, and entirely new chassis for the LaSalle and Series 60 Cadillac. Wheelbase on LaSalle has been increased 4 in. to 124 in.

The Series 65 Cadillac is a new model with chassis similar to the Series 70 but equipped with a Fisher body and is intended for buyers who desire a bigger car priced below the Fleetwoods. In the interest of simplifying the line of chassis models, the former Series 80 short wheelbase Cadillac V-12 has been discontinued.

From a mechanical point of view, the 1937 models feature larger but lower speed engines which, in connection with lower rear axle ratios, result in higher car speeds; new transmissions which are more compact and lighter in weight; hypoid rear axles on the LaSalle and Cadillac 60; new three-point suspension and improved hydraulic valve lifters for all V-8 engines; improved steering system, with cross-mounted drag link on LaSalle and Cadillac 60, and improved steering geometry and steering ease due to zero caster angle setting. LaSalle and Cadillac 60 frames are new with I-section X-member. Independent springing is continued with some refinements. Stabilizers front and rear are mounted on all lines.

Because of the more conservative clientele of the 16-cylinder Cadillacs, less radical changes in structure have been made in these models. The appearance and body styles listed have been unaltered. There have, however, been a number





LaSalle

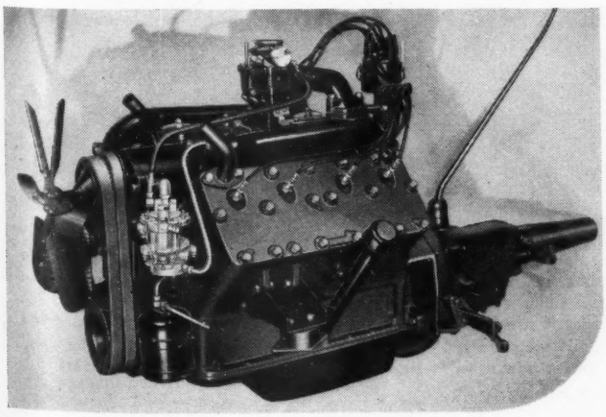
(Opposite page) Cadillac series 65 sedan. (Above) Wheelbase on the new LaSalle has been increased to 124 in. (Bottom of page) A 322 cu. in. V-type engine in the LaSalle, replaces the straight eight used last year.

(Bottom of opposite page) Details of the new series 60 chassis.

Hypoid Axles on LaSalle and Cadillac 60

of mechanical changes. A front stabilizer similar in design to that used on Series 75 and 85 has been added so that the V-16 now has stabilizers front and rear. The former mechanical brakes are superseded by 14 in. hydraulic brakes having a vacuum booster and ribbed cast iron drums. All series therefore have hydraulic brakes.

LaSalle Series 50, 3⅜ x 4½ in., 322 cu. in. V-type engine develops 125 h.p. at 3400 r.p.m. with cast iron head and standard compression ratio of 6.25 to 1. An optional compression ratio of 5.75 to 1 is offered.



Lynite pistons with T-slot and anodized finish are used with two oil rings and two compression rings per piston. Connecting rod bearings are of steel backed babbitt; main bearings bronze backed babbitt alloy. Crankshaft is fully counterweighted but no vibration damper is used.

Cadillac Series 60, 65, 70, 75 all use the same V-8, L-head, 3½ x 4½ in., 346 cu. in. engine, developing 135 h.p. at 3400 r.p.m. with cast iron head and compression ratio of 6.25 to 1. Optional compression ratio is 5.75 to 1. Piston assemblies are similar in design to those in the Series 50 engine. Crankshafts, however, are fitted with dampers.

All the V-8 engines have a new engine mounting consisting of two front supports with brackets extending from the crankcase, bolted to rubber pads on the frame and only one support at the extension of the transmission. On the V-12, engine supports are similar.

The rear support is of a new type in which the action of rubber in shear is combined with action in compression. The effect is to allow free movement of the engine through a limited distance after which the resistance of the rubber builds up rapidly preventing excessive engine motion and preventing shaking of the engine in the chassis at high speeds or over rough roads.

Refinements in the action of the

Cadillac-LaSalle

valve silencers which are used on all engines, also contribute to engine quietness. The reservoirs which were formerly provided in the valve tappet brackets have been eliminated, the oil now passing directly to each tappet body through a longitudinal passage drilled through each valve tappet guide casting. A Handy oil filter now cleans all oil passing to the hydraulic valve silencers, and also acts as an air trap. An additional safe-guard against air becoming trapped in the tappet bodies are "jiggle pins," one being placed in each of the valve guide castings and provides a continuous small leakage of oil and bleeds any air which may be present.

The chassis of all models have been improved, stressing durability and weight reduction, the latter being most pronounced on Series 60, 65 and 70.

Series 50 and 60 frames are similar in design. While they differ in many details from the 1936 frames, the fundamental design remains similar with the exception of the X-member arms which are now I-section. Frames of the larger Cadillacs remain substantially the same.

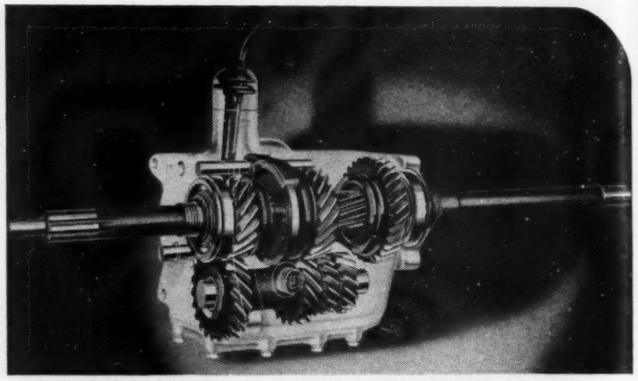
The former spiral bevel rear axle is continued on Series 65, 70, 75 and 85 cars. Series 50 and 60, however, have a hypoid design. Endwise adjustment of the new differential, however, is by shims instead of by threaded sleeve, the differential bearings being of the roller type. Aluminum bronze thrust bearings have been placed between the two differential pinions and the housing.

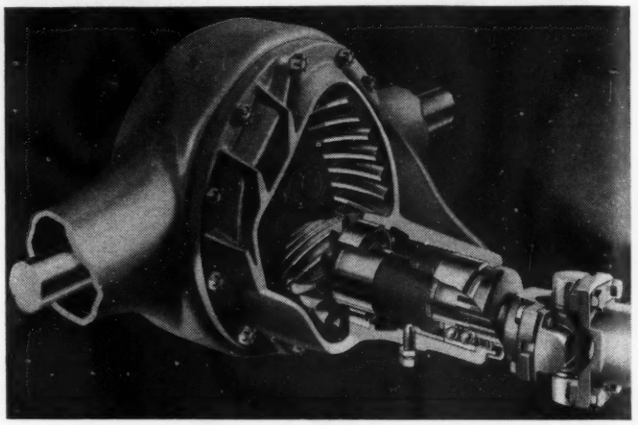
A new transmission with all-helical gears is used interchangeably on all models. The low and reverse gear is of the sliding type mounted on helical splines, the second speed gear is constant mesh, the transmission in so far as the general arrangement of the gear train is concerned being fundamentally similar to the 36-60 design. The shifter shafts, however, are offset and are mounted on the side of the transmission permitting lowering of the transmission top which in turn permits a lower front compartment floor. The transmission cover is now on the bottom instead of the top.

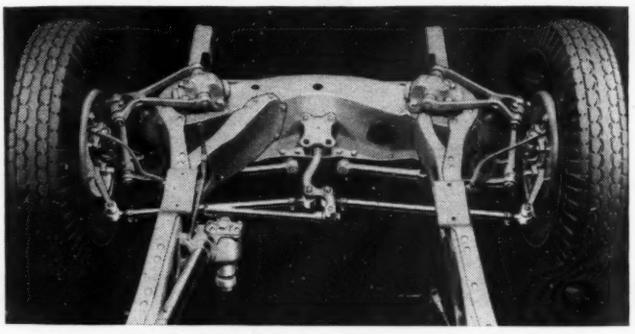
Ventilated Long clutches with hardened clutch throwout bearing buttons are used. The throwout bearing is packed with lubricant at assembly and should require attention only at very long intervals.

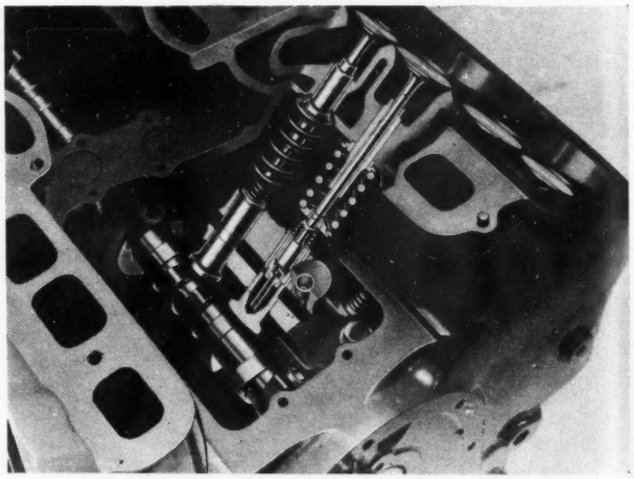
Series 50 and 60 have a novel and lighter rear spring design in which

(*Continued on page 32*)

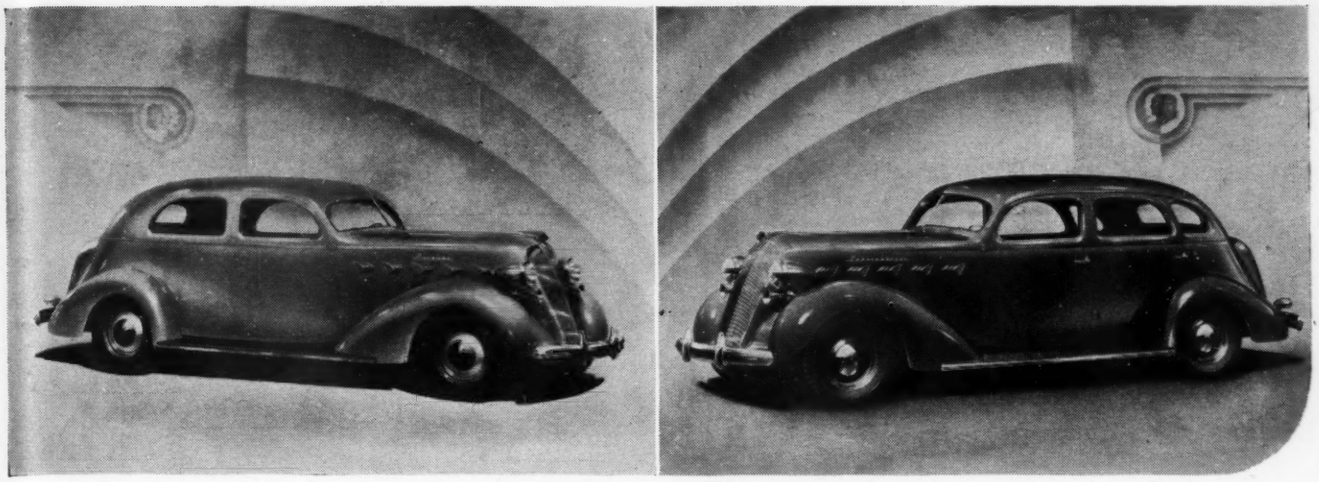




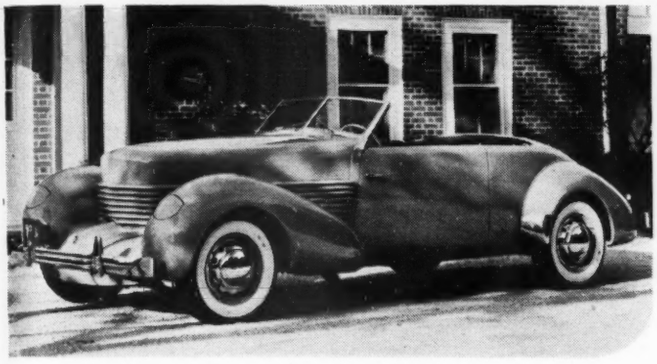




(Reading down the column) 1. Shifter shafts are offset to the side and the cover plate is now on the bottom of the new transmission on Cadillac and LaSalle cars. 2. Hypoid reduction gears are a feature of the LaSalle and series 60 Cadillac. 3. Cross link steering has been adopted on the Cadillac and LaSalle V8 lines. 4. A "jiggle" pin is now used to bleed air from the hydraulic valve lifters



The Graham Cavalier and the Graham Supercharger



The 1937 Cord Phaeton Sedan

CORD

CORD for 1937 offers three body styles: the Westchester 5-passenger sedan; the five-passenger phaeton sedan, the sportsman's coupe and the owner-chauffeur driven Berline. All mounted on the Cord 125 in., front drive chassis powered with V-8, 125 hp. engine. When supercharged the engine develops 160 hp. The phaeton-sedan is illustrated.

A new Auburn with individual styling and performance is now in the process of development. Completed cars are expected in February or March of the coming year.

AMERICAN BANTAM

WHILE engine dimensions of the American Bantam remain the same (2.2 x 3 in.) as its predecessor, the American Austin, power has been increased to 20 hp. at 4000 r.p.m. Pistons are now of cast alloy steel and the engine is pressure lubricated instead of the jet type lubrication formerly used. Overall length including bumpers is 120 in., while the tread width is 46 in.

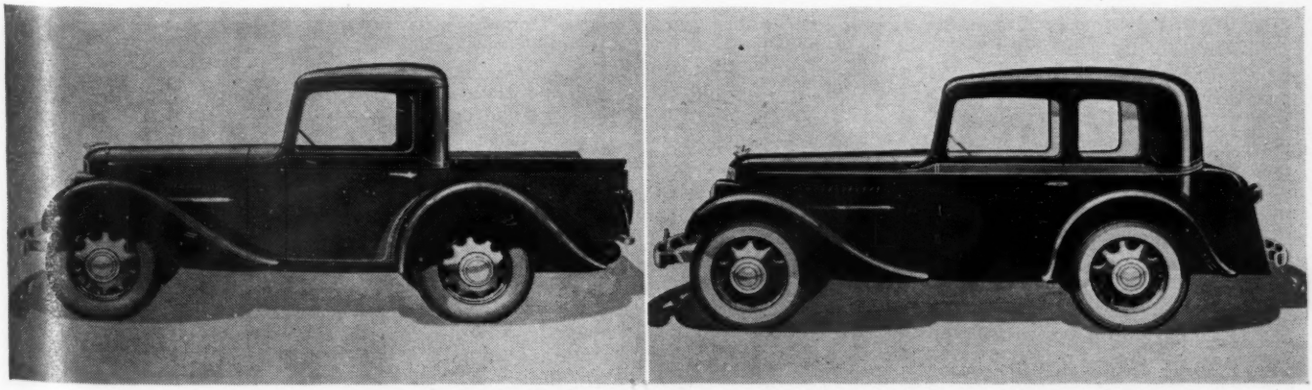
Seven different body models are offered for 1937. These include: quarter-ton truck chassis, $275. Chassis with panel body $395. Chassis with pick-up body $385. Business coupe $335. Deluxe coupe $385. Standard coupe $365. Standard roadster $385. Custom built roadster $445 up.

Fuel mileage of 45 to 50 miles per gallon and tire mileage of 30,000 to 40,000 miles per set of tires is claimed.

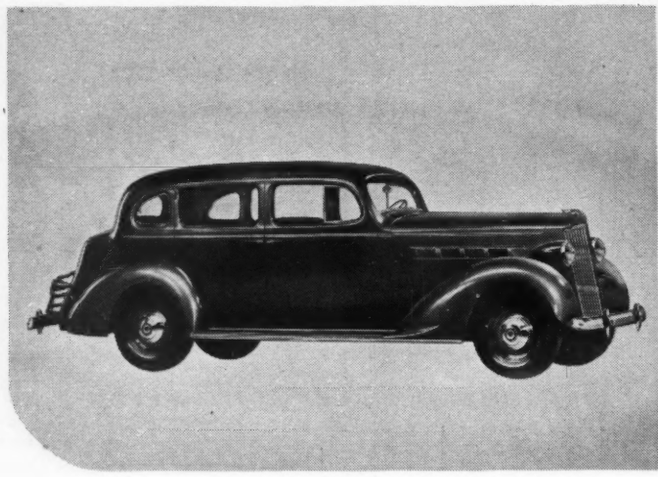
The open-bodied ¼ ton truck and deluxe coupe are illustrated.

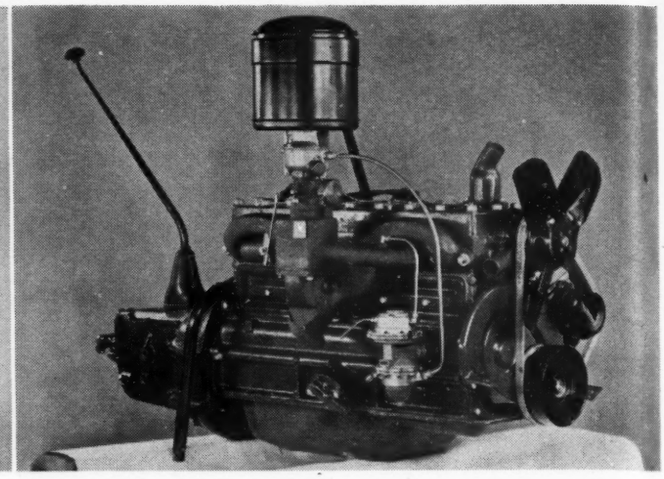
GRAHAM

COMPLETE Graham line for the coming year comprises the Crusader Six, series 85, on 111 in. wheelbase; the Cavalier series 95, on 116 in. wheelbase, the Graham Supercharger series 116 on 116 in. wheelbase and the Graham Custom supercharger series 120 mounted on 120 in. chassis with the exception of the coupe which is on a 116 in. chassis. The Cavalier 2-door sedan and the Supercharger touring sedan are illustrated.



The American Bantam Pick-up Truck and the Deluxe Coupe





The new, low-priced Packard Six and its new 237 cu. in. six-cylinder engine.

PACKARD

WITH the addition of a new 3 7/16 x 4¼ in. six mounted on a 115 in. chassis, Packard has a line of four cars covering practically the entire class of automobile requirements of price and size. The line comprises the new six, the 120, the super-eight and the Packard twelve. Among the mechanical features found on each chassis are, Safe-T-Flex front wheel suspension, hypoid rear axle gears, sway bars, hydraulic brakes. The illustrations show the new six cylinder engine and the six cylinder touring sedan.

Complete details of the line were given in the September issue. Detailed specifications are given in the tables in the back of this issue.



The new 1937 Pierce Arrow custom sedan

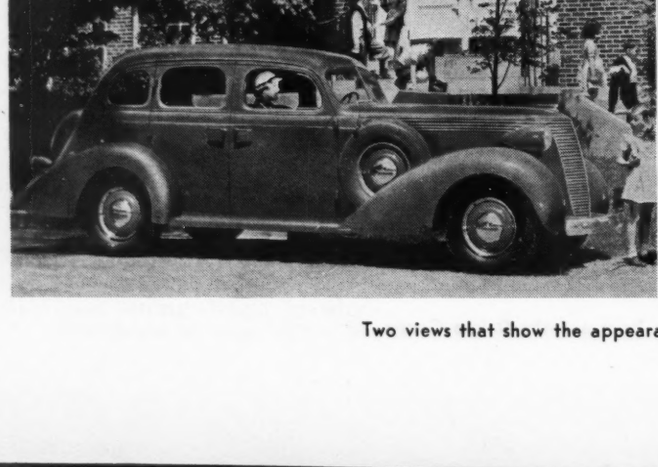
STUDEBAKER

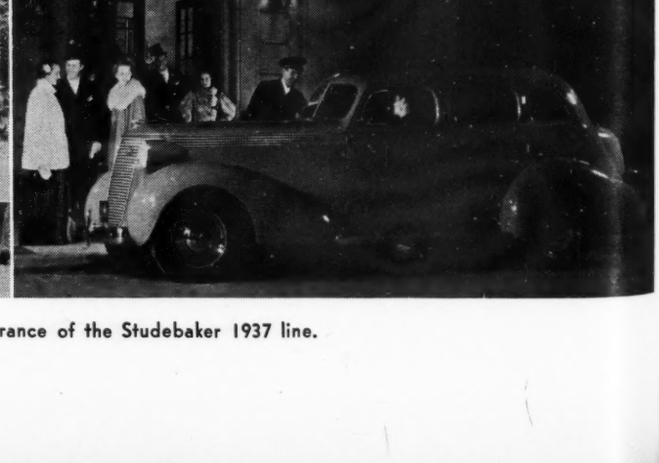
STUDEBAKER, which was the first company to announce its 1937 line of cars, continues the simplified line of Dictator sixes at a base price of $665 and the President eight starting at $965. Over-drive transmission and hypoid reduction gears are among the chassis features. Other features include rubber insulated universal joints and a new rotary door latch. The Dictator four-door regal sedan and the President cruising sedan are shown.

Save for detailed changes the engines remain the same as last year. The planar individual front wheel suspension which has been used for two seasons is continued as standard on the President and optional on the Dictator. The automatic hill holder is also continued on all models. Transmissions have a new synchronizing unit for improved shifting. Rotary type door latches, requiring only finger tip pressure to operate, are new.

PIERCE ARROW

PIERCE ARROW for 1937 continues its eight-cylinder line in two wheelbase lengths, 139 and 144 in., and its 12-cylinder line in wheelbase lengths of 139 and 144 in. A new 5-passenger custom sedan is being introduced for both the 8 and 12-cylinder 144-in. chassis. A new formal sedan with leather top and rear quarters and with extra seats in the rear compartment is also being offered on these same chassis. The new custom sedan is shown.





Two views that show the appearance of the Studebaker 1937 line.

HUDSON

(*Continued from page 10*)

tinued with improvements are as follows: "Radial Safety Control," "Automatic Draft Elimination," and the mechanical pick-up in the hydraulic braking system.

The frame is more massive and rigid to accommodate the wider bodies and comprises two X-members, one at the forward end extending back to the rear engine support, the other at the center with a heavy boxed and welded center section and rear arms gusseted to the side rails. The steel underbody which fastens the body to the frame at 38 points serves to impart still greater rigidity to the frame.

Although mechanical specifications of the engine remain the same, horsepower has been stepped up by improvements in manifolding, carburetion, and in other respects. Power of the 3 x 5-in. six-cylinder engine has been increased from 93 hp. to 101 hp. at 4000 r.p.m. with standard compression ratio of 6.25 to 1 and iron head; with aluminum cylinder head and 7 to 1 ratio, the engine develops 107 hp. at 4000 r.p.m. The 3 x 4½-in. eight-cylinder engine formerly developed 113 hp. as a result of detailed improvements it now produces 122 hp. at 4200 r.p.m. with a standard compression ratio of 6.25 to 1.

A new Carter double downdraft carburetor in conjunction with improved manifolding is one of the factors contributing to increased power and added smoothness.

The clutch continues of the oil-cushioned single plate type with heat-treated cork inserts for smooth engagement and durability. The transmission which was made longer and heavier in 1936 remains the same for 1937. Universal joints are roller bearing type with a tubular propeller shaft. On the six, shaft has been increased to 2¾ in. in diameter. The rear axle also remains the same as last year. Longer differentials bearings and bronze bushings in the differential pinions have been added.

The Rhythmic Ride spring suspension is retained this year with some improvements. Front springs are 4½ in. longer and in combination with new seat cushion springs produce improved riding comfort.

Bodies are of all steel welded construction with a steel roof and are two inches lower overall. The front seat is 55 in. wide at the cushion which is 5 in wider than for 1936.

See You At The Shows!

Canadian National Automobile Show, Toronto	Nov. 7-14
National Automobile Show, Grand Central Palace, New York	Nov. 11-18
Omaha Automobile Show	Nov. 11-15
Philadelphia Automobile Show	Nov. 12-19
Scottish Motor Show, Glasgow	Nov. 13-21
International Aviation Show, Paris, France	Nov. 13-29
Columbus Automobile Show	Nov. 14-20
Boston Automobile Show	Nov. 14-21
Buffalo Automobile Show	Nov. 14-21
Chicago Automobile Show	Nov. 14-21
Detroit Automobile Show	Nov. 14-21
New Haven Automobile Show	Nov. 14-21
Indianapolis Automobile Show	Nov. 14-21
San Francisco Automobile Show	Nov. 14-21
Washington, D. C., Automobile Show	Nov. 14-21
Cincinnati Automobile Show	Nov. 15-21
St. Louis Automobile Show	Nov. 15-22
Pittsburgh Automobile Show	Nov. 16-21
Brooklyn Automobile Show	Nov. 21-28
Cleveland Automobile Show	Nov. 21-28
Montreal Automobile Show	Nov. 21-28
Kansas City Automobile Show	Nov. 21-29
Milwaukee Automobile Show	Nov. 21-28
Portland Automobile Show	Nov. 22-29
Baltimore Automobile Show	Nov. 26-Dec. 5
28th Automobile Salon, Brussels, Belgium	Nov. 28-Dec. 9
Peoria Automobile Show	Nov. 30-Dec. 5
Natl. Exposition of Power & Mechanical Engineering, Biennial Meeting, New York City	Nov. 30-Dec. 5
First International Consumers Petroleum Exposition, Convention Hall, Detroit	Dec. 5-13
Automotive Service Industries Joint Show, Chicago	Dec. 9-13
National Motor Boat Show, New York	Jan. 8-16
Illinois Automotive Ass'n, 4th Annual Show and Maintenance Exhibit, Navy Pier, Chicago	April 24-28, 1937

WILLYS

(*Continued from page 11*)

four-ring cast iron pistons, pressure lubrication and rubber mountings.

A 13-plate USL battery is placed in a compartment built in the right front fender and is easily accessible under the hood. Auto-Lite starting and ignition system is used.

Among other outstanding features, the Willys has improved intake manifold, large air cleaner and silencer, double drop "X" and "K" type frame, steel running boards and steel centered safety steering wheel.

Prices, while not announced at the time of going to press, are expected to be the lowest of any American full-sized passenger car.

BUICK

(*Continued from page 23*)

tooth roller. Caster, camber and toe-in are now all set at zero.

Parking brake hook-up has been improved by the use of a straight pull cable, directly to the junction of the brake rods at the rear of the X-member. Anchor pin location on the series 60 and 80 has been altered to obtain smoother braking. Shoes on the 40 and 90 series remain the same.

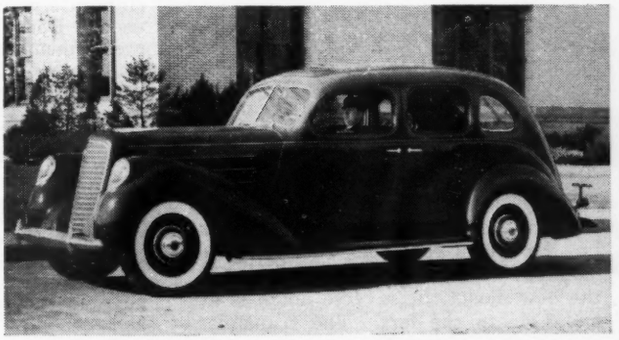
Backing plates and shoes on all models are now all zinc plated.

Turning now to the bodies, the outstanding feature is the increase in available space for both passengers and luggage. As a result of the hypoid gears, floor level has been lowered more than 2 in. and over-all height has been reduced 1 in. on the 40 and 60 series. At the same time, seat widths have been increased approximately 3 in.

Body insulation has been materially improved. In addition to floor and panel insulation, two leather strips are provided for the doors.

Another body feature is the new seat adjustment which is designed to raise the seat ¾ in. for each 4 in. of forward movement.

LINCOLN



Headlamps mounted in the front fenders, V-type windshield, more sloping rear quarters and hydraulic valve lifters are new features on the 1937 Lincoln cars. 21 body types in all, including custom designs by Brunn, Judkins, Willoughby and LeBaron are available.

CHRYSLER

(Continued from page 3)

fully to a tapering convex radiator grille formed by horizontal chrome plate bars. The top of the hood, longer than before, is a single stamping. It is hinged at the rear and opens upward. The radiator ornament serves as a hood-lock control. Hood louvres in a panel of finely drawn horizontal bars, flow rearward from a point close to the center of the front end of the hood.

The Chrysler Imperial includes all of the new features mentioned in connection with the Royal and is, in addition, a larger, more luxurious and more powerful car. Its eight-cylinder 110 h.p. engine has a piston displacement of 273.8 cu. in. and a compression ratio of 6.7 to 1. The windshield is wider and bodies are roomier. The rear seat cushion is 48½ in. wide and the front seat cushion 47 in., a considerable increase over last year's DeLuxe Eight.

The Chrysler Custom is a car of large seating capacity with ample room for all passengers to ride comfortably. The two body styles each seat seven persons.

An over-drive gear is standard equipment on the Airflow and in conjunction with the streamlined design is said to result in unusually low fuel cost for a car of its size and weight.

CADILLAC LASALLE

(Continued from page 28)

the spring leaves are separated with waxed liners impregnated with an anti-friction material which requires no lubrication. No spring covers are used with this type of spring. On Series 65, 70, 75 and 85 spring covers and graphite grease lubrication is continued. Fixed type end-to-end discharge shock absorbers front and rear are used on all Series.

The new propeller shaft adopted this year features a novel slip joint. Instead of the solid splined stub shaft which was welded to the tube, the splines are formed in the inside of a tube pressed into a second tube equal in diameter to the propeller shaft proper, the splined and shaft tubes being welded together.

OLDSMOBILE

(Continued from page 17)

and the axle shafts are now of the integral flange type, with bearings close to the center line of the wheels. Differential and carrier assembly has Hyatt self aligning bearings on each side. A Hyatt roller bearing also supports the pinion shafts at the pinion end, while a double-row New Departure bearing is used at the forward end. Rear axle ratio is 4.375 to 1. An optional ratio of 4.625 to 1 is also available.

Hydraulically operated, two shoe Bendix brakes are continued. For parking the rear shoes are mechanically operated.

Rigidity of the frame is increased as the result of I-section members being used for the X-member. In addition three sets of cross members are incorporated between the side rails and the X-member. Further rigidity "stepping" the sides of the channel section side rails between the legs of the X-member.

Improved riding conditions result from the installation of ride stabilizers or torsion rods at both front and rear of the chassis. Knee action is continued and weight distribution has been improved by moving the body forward, resulting in equal distribution of weight between the front and rear axles.

Lines of the all steel bodies with turret tops can best be appreciated from the illustrations. However, the interiors are larger and afford more comfortable seating. When adjusting front seats, the seat moves upward as well as forward. Luggage compartment is larger and radio antenna is now molded into the running boards. Drip molding is a feature and coupes now have an auxiliary seat behind the driver's seat.

TERRAPLANE

(Continued from page 18)

On the Super-Terraplane, the double downdraft carburetor is equipped with automatic choke and thermostatic heat control, back-fire arrester, air cleaner, dash pot throttle control and vapor lock relief valve.

On the Deluxe, when not equipped with radio, the generator has a maximum capacity of 16 amperes. On all other models, and on Deluxe models equipped with radio, a generator with voltage control and having a capacity of 25 amperes is provided. For greater accessibility, the battery is now located beneath the hood on the left side of the car.

On the radial safety control the radial arm has been shortened slightly and the connection to the axle modified to eliminate the pivot pin. Front springs are slightly longer and have a somewhat lower rate. The sway bar has been moved to the front. Direct acting shock absorbers are continued but the valve action has been modified to improve the ride.

The oil-cushion single plate clutch is continued. In combination with the Electric Hand, the automatic clutch unit, clutch operation becomes entirely automatic, and at low speed coasting is provided. In the new Terraplanes a governing device is employed which limits the free wheeling action of the automatic clutch to speeds of 15 or less miles per hour. The device functions when the foot is lifted from the accelerator, as in idling. Gear changes are made when the foot is lifted from the accelerator.

The Electric Hand remains substantially the same, except for a change in the form of the shifter gate mounted on the steering column. On the new model the reverse notch is at an angle to the left. The transmission, which was considerably enlarged in 1936, remains the same.

The roller tooth steering gear, used in 1936 only on the larger Hudson models, will be standard on all lines. The adjustment of the new steering gear is simple. The use of shims has been largely eliminated and the adjustment is external without the need for disassembling the gear for final adjustment.

The all-steel bodies for 1937 are entirely new with steel roof and steel underbody. On the sedan, the front seat width is 5 in. greater and there is also 1¼ in. more headroom in spite of the fact that the body is 2 in. lower. A complete line of bodies will be supplied.

FORD

(Continued from page 7)

shields and all windows are now of safety glass as standard equipment. Improvements in body arrangement include a large new luggage compartment in which the spare tire is carried, except in single-seat cars. In these models the spare tire is carried in back of the seat.

With the introduction of this new 60-hp. chassis, Ford dealers have a car for all types of buyers, ranging from the new model up to and including the large Lincoln 12.

Following bodies offered with deluxe equipment and 85 hp. engine: Tudor, Fordor, roadster, phaeton, five window coupe, Tudor touring, Fordor touring, Club cabriolet, convertible sedan, and club coupe.

The Tudor, Tudor touring, Fordor, Fordor touring and five window coupe are offered without deluxe equipment with either the 60 or 85 hp. engines.

CHEVROLET

(Continued from page 13)

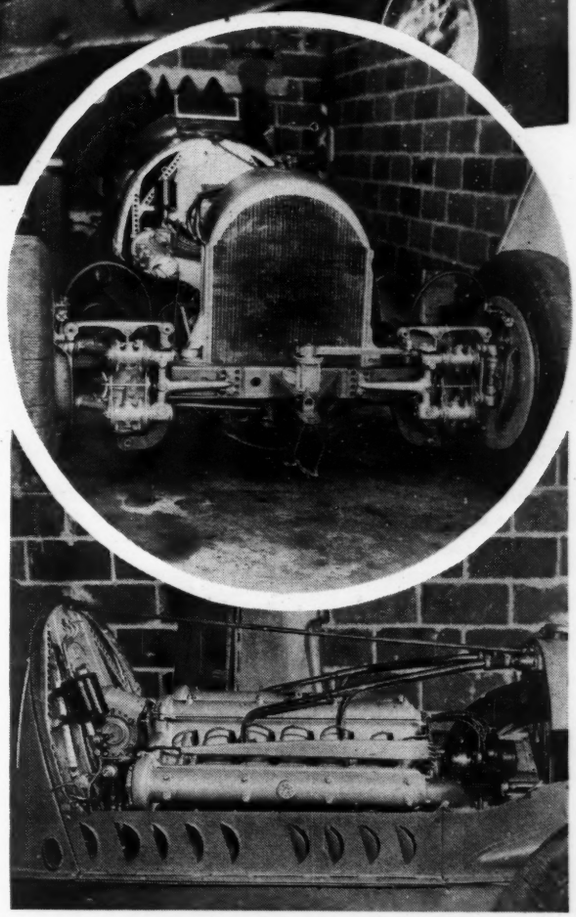
front of the driver and are indirectly illuminated.

The new hood is longer and now extends to the radiator grille, increasing its apparent length. Hood side hinges have been eliminated and automatic hood supports are provided.

An entirely new box-girder type of frame, similar in construction to that used in the 1936 Chevrolet standard models, is used in both 1937 chassis. It is both lighter and stiffer than the elaborately braced frame formerly used. Both the side rails and the cross members, of which there are four, are of box section. The frame is much simpler, allowing better access to the various chassis units for servicing. The engine front support is a double box section member instead of an open section. Step hangers, battery support brackets, spring hangers and other attaching parts are fastened directly to the box section side rails. Springs line up directly under the side rails and the steering gear is mounted on top of the side rail.

Analyzing Results Of The Vanderbilt Cup Revival





Tazio Nuvolari, in his 12 cylinder Alfa Romeo, as he sped to victory at the Roosevelt Raceway, October 12. (Down the column) (Top) Details of the Alfa Romeo independent suspension system. Note the wind scoops in the brake backing plates. (Middle) Side view of the 12 cylinder, 246 cu. in. Alfa Romeo engine which Nuvolari drove

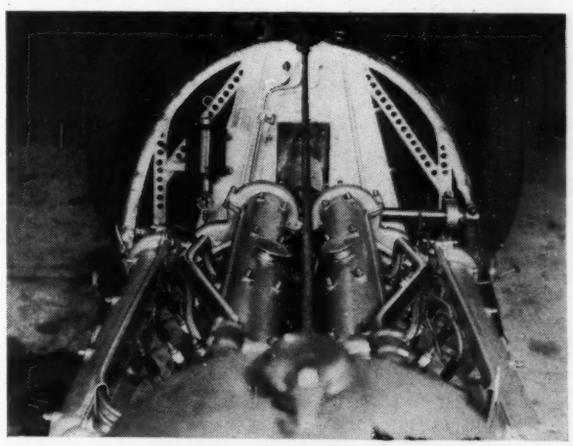
It Was Nuvolari in an Alfa Romeo All the Way Driving the Four-Mile "Pretzel" at 66 m. p. h.

By Bill Toboldt
and
Bob Hankinson

TAZIO NUVOLARI of Italy averaging 65.998 m.p.h., Wimille of France at 64.072 m.p.h., Brivio of Italy at 62.994 m.p.h., Sommer of France at 62.719 m.p.h. and Fairfield of England at 60.645 m.p.h. were the first five drivers to cross the finish line at the end of the grueling 300-mile revival of the Vanderbilt Cup Race held at the new Roosevelt Raceway at Westbury, L. I. Only three Americans were among the first ten to finish, Mauri Rose in a Burd Piston Ring Special in seventh place, Bill Cummings, eighth, and Decon Litz, tenth.

Nuvolari led for the entire distance, except for one lap when he stopped for fuel. In all he won $36,000, twenty thousand of which was first prize and the balance consisted of lap prizes.

Disappointment in America's showing is somewhat tempered by the fact that American race cars have been developed primarily for circular tracks such as Indianapolis which tests the engines primarily, whereas European race cars are designed for road racing which the new Roosevelt track approximates. Such racing requires not only engines but also adequate transmissions of the synchromesh type, clutches and brakes.



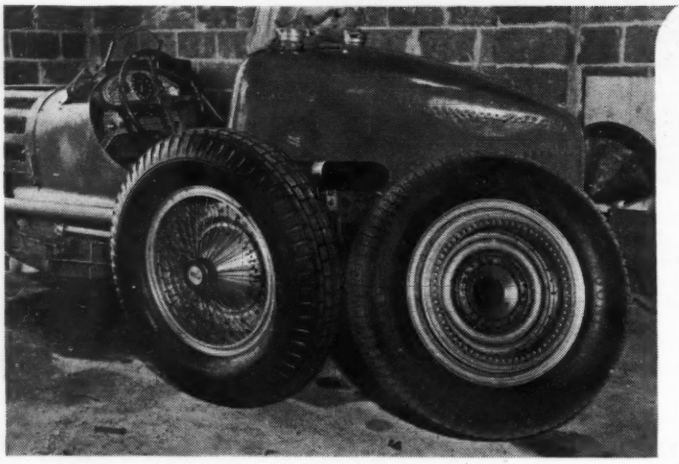
Nuvolari's engine, showing overhead camshafts and spark plugs



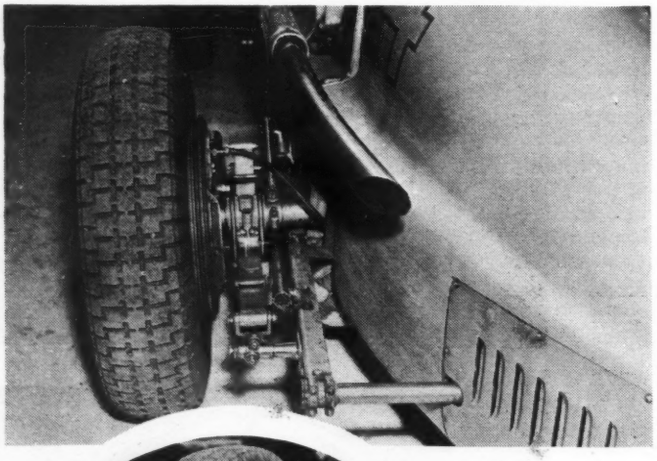
Mauri Rose, in the Burd Piston Ring Special, was first among the Americans

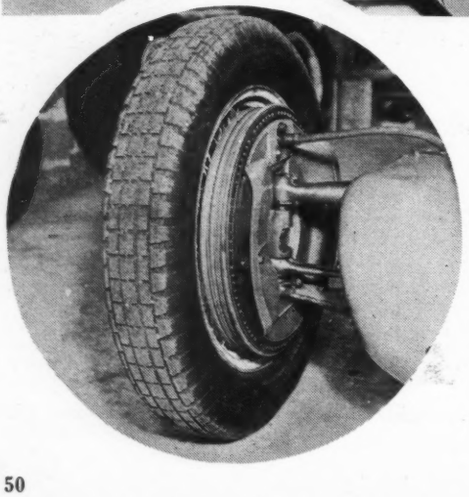


Jean Pierre Wimille, leading French driver and Grand Prix winner in France this year, brought his Bugatti home second



Unusual wheel construction on the Bugatti cars. The wheels, brake drums and tires are removed as a single unit which in turn permits replacement of brake shoes





(Above) Etancelin's Maserati was independently sprung on all four wheels. The rear suspension is shown. (Left) Front suspension system on Etancelin's Maserati. Note also the air scoops for cooling the brakes

In addition, many of the foreign cars were equipped with electro-vacuum gear shifting devices (similar to the Bendix) permitting pre-selection of gears.

As a result, the foreign drivers could pre-select the desired gear as they came down the straightaway; maintain top speed for a longer time than the Americans because of more adequate brakes; and then shift quickly by a simple movement of the clutch pedal and once through the curve have greater acceleration.

The Americans, on the other hand, made little use of their transmissions and because of smaller brakes were forced to shut off at an earlier point on the straightaways.

Another point that must not be lost sight of in studying the European victory is that the teams, for the most part, are backed by the car factories while the American cars are the result of the individual drivers.

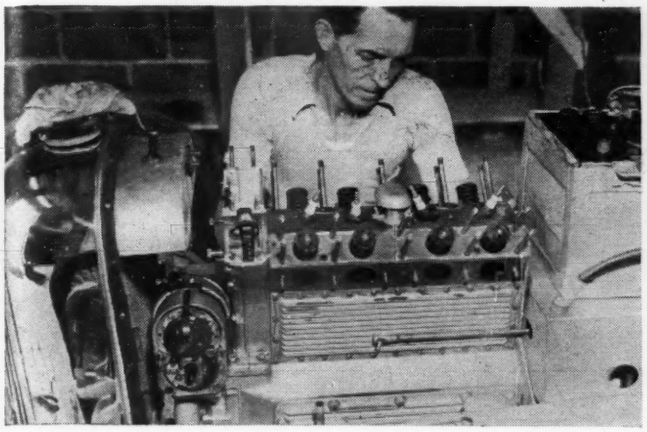
Supercharging also played its part in the victory, all the foreign cars were fitted with Rootes type blowers, while only five American cars, the Topping Special driven by Babe Stapp, the Harry Hartz entry driven by Horn, the two Duray Specials and a Bugatti piloted by Dave Evans, were so equipped. In this connection it is interesting to note that no supercharger trouble developed during the race.

In fact, there was very little mechanical trouble of any sort during the race. In all, 45 cars faced the starter's flag and at the end of the 300 miles, 30 cars were still running.

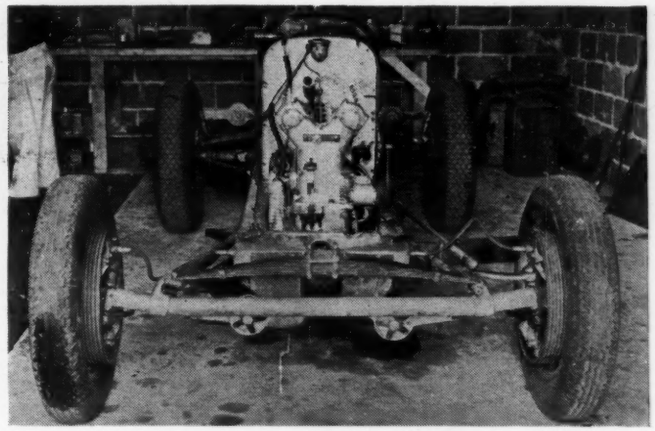
Shock absorbers and shock absorber links gave the most trouble. This was undoubtedly the result of the track as there were holes 6 in. deep on many of the turns by the time the 200-mile mark was reached. The straightaways, however, were still in good condition at the end of the race. In this connection, the foreign entries, with independently sprung wheels, had the advantage. All cars, incidentally were rear drives.

Among those cars eliminated as the result of skidding into the guard rail were Wilbur Shaw's Gilmore Special and the Alfa Romeo driven by Farina. Shaw hit the wall on his first lap at the end of the straightaway, while Farina lasted 18 laps.

Billy Winn, who was well up with the leaders, and for a time was riding in second place, was



Dan Hogan and his 104 cu. in. Midget Offenhauser, which was well up in the running until Bob Swanson ran out of fuel on the back stretch. The only smaller engines in the race were the 6 cyl., 89 cu. in. English ERA's



Frontal view of Billy Winn's 255 cu. in. Miller Special. Winn was riding second and third positions for the major part of the race, but was forced out on his 65th lap when he stripped his rear axle gears

eliminated on his 65th lap when his rear axle ring gear failed. Ted Horn, who was piloting the Hartz entry and was working up through the field, passed out of the picture late in the race when he was unable to restart his engine after stopping at the pits to take on fuel.

A clogged cooling system, which eventually resulted in burned valves, caused Shorty Cantlon to withdraw on his 33rd lap. Milt Marion was eliminated when his clutch shaft broke. Defective universal joints and a sheared steering gear caused the withdrawal of Joe Thorne and Tony Willman respectively. Phillips' Bugatti suffered a broken connecting rod on the seventh lap.

(*Continued on page* 78)

Specifications of Roosevelt Raceway Entrants

Car No.	Make	Driver	Cyl.	Bore	Stroke	Displacement	Weight	Supercharger	Brakes	Carburetor No. Used	Carburetor Make	Spark Plug	Mag.	Ign. Cable	Make of Engine	Qual. Time	Average Speed or Cause of Failure	No. of Pit Stops
8	Alfa Romeo	Nuvolari	12	2.756	3.464	246.4	1650	Yes	H	1	W	C	B	..	Alfa Romeo	69.929	65.998	2
18	Bugatti	Wimille	8	3.31	4.21	286.7	1630	Yes	M	1	..	B	B	..	Bugatti	64.981	64.072	3
9	Alfa Romeo	Brivio	12	2.756	3.464	246.4	1650	Yes	H	1	W	C	B	..	Alfa Romeo	67.030	62.994	5
16	Alfa Romeo	Sommer	8	2.834	3.937	195.2	1608	Yes	H	1	W	C	B	..	Alfa Romeo	63.768	62.719	1
46	E R A	Fairfield	6	2.247	3.750	89.2	1350	Yes	M	1	SU	B	S	..	E R A	63.018	60.645	2
12	Maserati	McEvoy	6	2.44	3.94	91.5	1320	Yes	H	1	W	B	S	..	Maserati	60.428	60.518	2
32	Burd Piston Ring Special	Rose	4	4.312	4.625	270.0	1575	No	H	2	Wi	C	B	P	Offenhauser	62.929	60.486	2
2	Boyle Products Special	Cummings	8	3.375	3.750	268.0	2000	No	H	2	Mi	C	B	P	Offenhauser	61.638	60.459	2
24	Maserati	Etancelin	8	3.3	4.2	292.8	1650	Yes	H	1	W	B	B	..	Maserati	60.202	60.182	4
15	Thompson Products Special	Litz	4	4.125	4.250	220.0	1830	No	H	2	Mi	C	B	P	Offenhauser	61.704	59.781	2
6	Gardner Special	Tabor	4	4.250	4.500	255.0	1900	No	H	2	Wi	C	B	P	Offenhauser	65.922	59.189	3
4	Burd Piston Ring Special	Andres	4	4.250	4.500	255.0	2000	No	H	2	Wi	C	B	..	Offenhauser	61.311	58.839	2
45	E R A	Howe	6	2.247	3.750	89.2	1350	Yes	M	1	SU	B	S	..	E R A	58.270	58.785	2
28	Hailey Bugatti Special	Evans	8	2.382	3.937	142.0	1350	Yes	M	1	Z	C	B	P	Bugatti	59.920	58.496	1
37	E R A	Lewis	6	2.2475	3.750	90.0	1520	Yes	M	1	..	B	S	..	E R A	57.760	58.386	3
10	Alfa Romeo	Farina	12	2.756	3.464	246.4	1650	Yes	H	1	W	C	B	..	Alfa Romeo	68.939	Hit Wall	..
29	Maserati	Raph	8	3.3	4.2	292.8	1650	Yes	H	1	W	..	B	..	Maserati	64.182	.....	..
48	Maserati	Gardner	4	2.716	3.937	91.2	1200	Yes	H	1	So	C	S	..	Maserati	59.682	R A F	3
49	Bugatti	Phillips	8	2.375	3.937	143.8	1800	Yes	M	1	Sc	C	B	P	Bugatti	57.137	Conn. Rod	..
7	Miller Special	Winn	4	4.250	4.500	255.0	1840	No	H	2	Mi	C	B	P	Miller	66.557	Ring Gear	4
62	Marion-Miller Special	Marion	4	4.125	4.125	220.0	1800	No	H	2	Wi	C	B	P	Miller	63.714	Clutch	1
21	Popping Special	Stapp	4	4.062	4.500	234.0	1800	Yes	H	1	Wi	Bo	B	Be	Miller Marine	60.503	R A F	4
3	Gilmore Special	Shaw	4	4.250	4.500	255.0	1800	No	H	2	Wi	C	B	P	Offenhauser	65.818	Hit Wall	..
5	Miller Special	Cantlon	4	4.062	4.750	247.0	1800	No	H	2	Wi	..	B	..	Miller	66.118	Burned Valves	7
27	Miller Special	Connor	4	4.125	4.625	247.0	1800	No	H	2	Wi	C	B	P	Miller	65.263	R A F	2
51	Hogan Special	Swanson	4	3.062	3.500	104.0	1100	No	M	1	L	C	B	Be	Offenhauser	66.326	R A F	3
52	Schallnam Special	Balus	8	2.875	5.000	252.0	1950	No	M	2	Wi	C	S	P	Duesenberg	56.556	R A F	4
67	Ambler Special	Lake	4	4.724	5.118	359.0	1900	No	H	2	W	C	S	..	Hisso	60.304	R A F	5
66	Ambler Special	Zarka	4	4.724	5.118	359.0	1900	No	H	2	Wi	C	B	..	Hisso	64.118	R A F	2
14	Elgin Piston Pin Special	Brisko	4	4.250	4.500	255.0	1600	No	H	2	Wi	C	B	P	Brisko	59.680	R A F	5
59	Miller-Duesenberg Special	Decker	8	2.762	3.500	172.0	1450	No	H	2	Ca	C	B	P	Duesenberg	63.523	58.382	1
53	Junior Offenhauser Special	Orenduff	4	3.062	3.500	105.0	1150	No	H	2	Wi	C	ES	..	Offenhauser	62.299	R A F	6
61	Miller Special	Cebulas	4	4.250	4.125	235.0	1900	Yes	H	2	Wi	C	B	..	Miller	51.452	.....	..
36	Garew Special	Miller	4	4.000	4.250	212.0	2011	No	H	2	Wi	C	B	P	Cragar	60.156	R A F	3
34	American Twist Drill Spec.	Putnam	8	3.062	4.250	250.0	1900	No	H	2	Wi	C	B	P	Studebaker	61.635	R A F	3
38	Joe Thorne Special	Thorne	4	4.250	4.750	270.0	1850	No	H	2	Wi	C	B	P	Offenhauser	58.781	Universal	2
23	Joe Thorne Special	Snowberger	4	4.125	4.250	255.0	1750	No	H	2	Wi	C	B	P	Offenhauser	59.606	R A F	3
25	Joe Thorne Special	Davis	4	4.125	4.250	255.0	1750	No	H	2	Wi	C	B	P	Offenhauser	60.487	.....	3
22	Hartz Special	Horne	8	2.875	3.500	182.0	1650	Yes	H	1	Wi	C	B	P	Miller	63.703	Engine	2
44	Leon Duray Special	Gulotta	4	4.062	4.250	220.0	1450	Yes	H	1	Wi	C	B	P	Offenhauser	57.402	R A F	2
42	Leon Duray Special	Willman	4	4.062	4.250	220.0	1450	Yes	H	1	Wi	C	B	P	Offenhauser	64.348	Steering Gear	..
65	De Palma Miller Special	Banks	8	2.750	3.750	179.0	1800	No	H	2	Wi	C	B	P	Miller	59.721	R A F	2
26	Shafer 8 Special	Shafer	8	3.181	4.625	284.0	2450	No	M	2	Wi	C	DR	P	Buick	58.206	R A F	1
43	Mid-West Red Lion Spec.	Snyder	4	4.250	4.500	255.0	2000	No	H	2	Wi	C	B	P	Offenhauser	63.908	R A F	2
17	Miller Special	Gardner	4	4.125	4.250	220.0	1457	No	H	2	Wi	C	B	P	Miller	65.036	R A F	6
57	G W Special	Wingerter	8	3.000	5.000	300.0	1850	No	H	2	Wi	C	B	P	Duesenberg	58.350	R A F	6

ABBREVIATIONS:
B—Bosch
Be—Belver
Bo—Bowes
C—Champion
Ca—Carter
DR—Delco Remy
ES—Edison-Splitdorf
H—Hydraulic
L—Linkert
M—Mechanical
Mi—Miller
P—Packard
R A F—Running at Finish
S—Scintilla
Sc—Schebler
So—Solex
W—Weber
Wi—Winfield
Z—Zenith



Why Jobbers?

NO one who knows very much about it and who looks at the matter from the several angles from which it should be considered will question the importance of the service which automotive jobbers, as a specializing group, contribute to the welfare of independent repairmen. There may be some repairmen, of course, who occasionally fail to realize fully just what the jobber can do and does do for them. This failure to recognize the real importance of the jobber is usually a lack of complete appreciation of what the jobber can do. The limit of possibilities along this line is generally the extent to which the independent repairman either seeks cooperation or takes advantage of the opportunities for special services which the jobber not only can easily provide but is cheerfully ready and willing to provide. Some independent repairmen, unfortunately, do not let the jobbers do all that they can for them. But that is a good subject for another article. Here we want to consider only two phases of the jobber—repairman relationship. They have to do with quality of products supplied and prices asked.

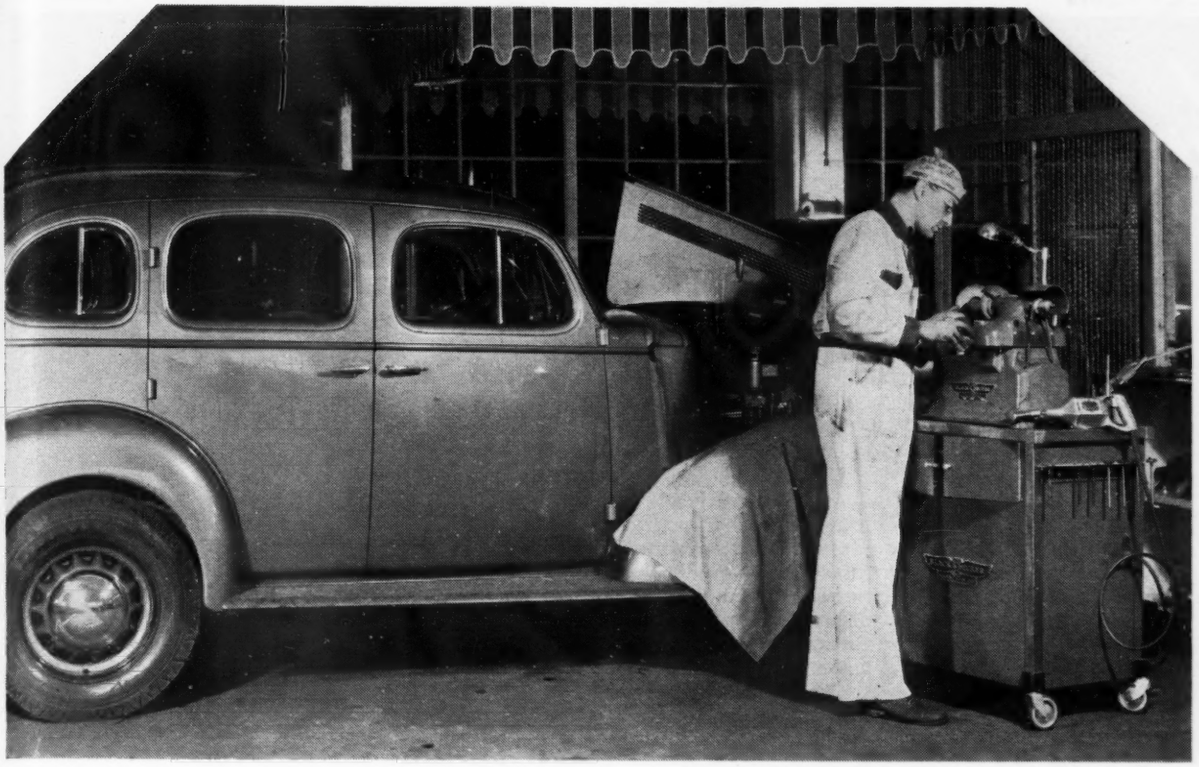
With regard to quality, it can be said first that dependable quality and dependable jobbers go together like Siamese twins. They are as inseparable as dependable service and dependable servicemen. It is easy to distinguish the many jobbers who are dependable from the few who are not. It takes only a short period of contact to tell the difference. Dependable jobbers handle only dependable parts—parts of quality. They buy from the makers of dependable parts.

Who are the parts manufacturers from whom dependable jobbers buy? To a very large extent they are the manufacturers of the parts which the vehicle makers buy for original equipment. The vehicle makers patronize these parts manufacturers because they are specialists in the production of certain lines of parts. The dependable jobbers buy also from replacement part manufacturers whose appreciation of the value of quality in their products is as keen and as controlling in the selection of their materials and the accuracy of their processes as is this same consideration in the influence it has on the activities of the dependable repairman.

These two kinds of parts manufacturers from whom dependable jobbers buy are striving constantly, because they're specialists, to improve the quality of their products and to lower their costs of production. They maintain extensive research laboratories and run exhaustive tests, not only of their own products but of their competitors. As a result their improved products are frequently made available to their jobbers even before the car manufacturers are ready for them.

An amazingly large number of the parts which are accepted as standard equipment on today's newest cars were pioneered and

(Continued on page 77)



Carbon & Valve Jobs Go Super Service

Tying These Jobs and Equipment in with Engine Tune-up Leads to Bigger Profits

A GOOD carbon and valve job will always remain the basis for any tune-up work. For unless compression is up to standard and equal in all cylinders it is impossible to get good performance and economical operation no matter how carefully the carburetor is adjusted, nor how accurately the distributor is timed and the points set.

For that reason many wide-awake shops are moving the carbon and valve tools and equipment up to the front of the shop alongside of the engine-testing equipment, where the carbon and valve job can be properly merchandised, with the result that profits are increased and better jobs are turned out.

When hard valve seats were first introduced, car owners and many mechanics, too, believed that it was no longer necessary to recondition valves and seats. Such is not the case. While it is true that the period between valve jobs has been materially increased, it is still necessary to recondition the valves and scrape carbon at regular intervals, if good performance is to be maintained.

Even on new engines, with only a few thousand miles to their credit, cylinder blocks and valve seats will warp occasionally and the only thing to overcome the trouble is to recondition valves and seats.

Modern valve reconditioning equipment is just as attractive and will bring in just as much business as other equipment that has been moved to the front of the maintenance establishment. Unfortunately, carbon and valve work started out in the back of the shop and there has been a certain reluctance to move it out front to its proper position. However, since engine-testing equipment, brake machines, wheel aligners, etc., placed at the front of the establishment have increased business so successfully, many shops are following through with valve-reconditioning equipment, placing it out front in the position where it rightfully belongs.

Of course, it is not always possible to place the carbon and valve department out "front." However, it should be placed next to the engine-testing equipment and where the customer can see the work being done. As in the case of all departments, it is advisable to use canopies or other methods to emphasize the department.

These create an impression of systematic arrangement of work within the shop and have a merchandising atmosphere that will assist in selling that type of service.

The Readers' Clearing House

Has Carburetor Trouble at Slow Speed

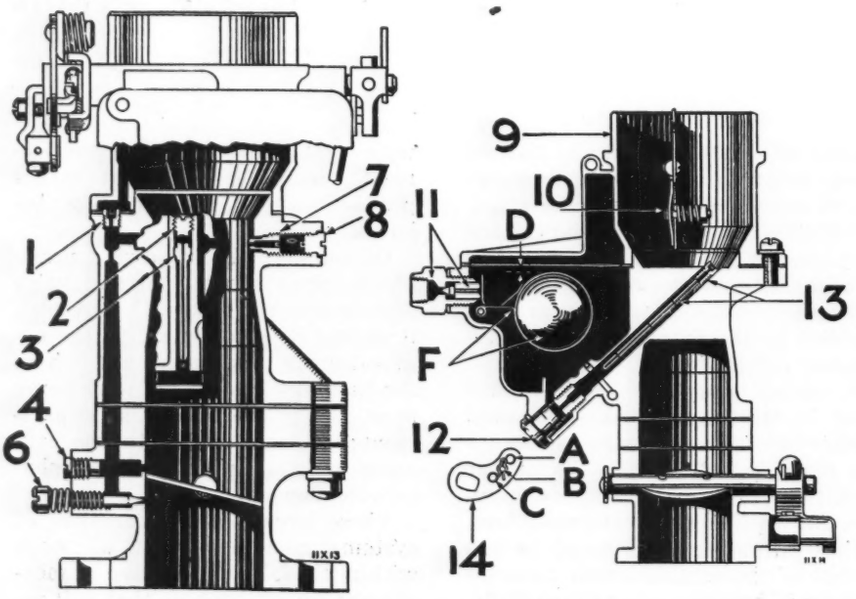
I have read various articles in the Readers' Clearing House of MOTOR AGE *and wonder if possibly you could give me some help.*

I have a 1933 PD model Plymouth. I have had the valves and seats gone over, also new rings, coil, points, rotor, condenser, plugs, and distributor head but the car will not run right under 10 miles per hour or, in plain words, does not idle good. This work on my car was done by an expert mechanic who has finally given up and says he is stuck.

If you can give me any help it will surely be appreciated. B. E. Litchrod, Wayside Inn Garage, Ellenville, N. Y.

IN the first place, I am wondering just how much under ten miles per hour you are trying to idle this engine. It is not made to idle slower than 7 miles per hour in high gear on a level road. If you attempt to bring the engine down to 4 or 5 miles per hour idling speed, you will experience difficulty both during the idle and during acceleration until you get above ten miles per hour.

Provided the work mentioned in your letter has been properly performed, the only point remaining to check is the carburetor. It may be necessary to replace the idle adjusting screw which may have been damaged due to having been turned too tight into its seat, or you may have to replace the economizer by-pass valve as this may be holding open and allowing an excessive amount of gas to be discharged during idling speed. The carburetor, of course, should be disassembled and cleaned and any part replaced that shows signs of wear. You should be particularly careful to see that the idle jet tube and the idle passage tube is clean. If the trouble is that the engine stalls during idling, it may be due to an air leak between the main body casting and the air horn at the step-up vacuum passage joint. This can be corrected by installing a bushing in the step-up passage and this bushing is supplied under Carter part No. 38A-26.



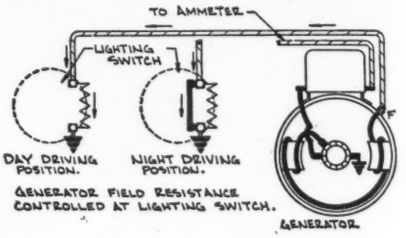
Sectional view of B & B Carburetor

CHECK THE GENERATOR CHARGING RATE

I would appreciate very much, information concerning 1934 and 1935 Master Chevrolet generators. We have a customer who owns a 1934 Master Chevrolet that burns the armature out every time he drives as much as 100 miles or more and the charging rate is less than 10 amps.

Also have a customer who owns a 1935 Master Chevrolet that will not charge enough to keep the battery up. This man is a doctor and does quite a lot of night driving. Is there some way to step this generator up by changing something under the dash? I have tried different armatures in it also new field coils and moved the third brush over as far as it will go, still it will only charge about 5 amps.

Why are there two wires connected to this generator? I will appreciate all the information you can give me about these generators. B. J. Thompson, 257 Highland St., New Albany, Miss.



Generator Circuit

I BELIEVE the difficulty you are experiencing with the 1934 model which continues to burn out generator armatures is that you are trying to adjust the third brush to get an ampere reading of 10 to 12 amps. without grounding the field terminal. This generator is the lamp load type and the third brush is not adjustable. It should be installed so that there are two commutator bars between the third brush and the positive brush. This is the correct setting and should not be changed.

In order to accurately test the generator output, it is necessary to ground the field terminal which is the extra terminal on the top of the generator. With this terminal grounded and an ammeter connected directly to the generator, the maximum output at a car speed of 27 miles per hour, is 16 to 20 amps. At a car speed of 60 miles per hour, the generator charging rate is between 11 and 15 amperes with the field terminal grounded. If you do not ground the

(Continued on page 56)

Everything Points to the Biggest Year in Pontiac History



BIGGER CAR · BETTER VALUE · GREATER ECONOMY

Exactly What America Wants

WHENEVER and wherever you get an impartial viewpoint you will hear this opinion expressed —"Pontiac again has hit the nail squarely on the head." Think it over and you will find no room for argument. Pontiac's 1937 line is 'made to order' for the 1937 market!

The average motorist today wants a bigger, finer car. He is ready again to enjoy without reservation the topmost comfort and luxury. But with this renewed desire to own the best, he retains a feeling of caution. He is watching prices, matching economy records, *checking up on values*.

And here's what this educated buyer finds when he turns to Pontiac. The new six and eight are bigger than ever—5 full inches bigger. Exterior and interior beauty have no parallels in the industry. The new Knee-Action (of exactly the type used on expensive cars), the improved center-point steering, and added weight give a ride that can't be topped. New Unisteel Bodies by Fisher plus Pontiac's famous triple-sealed hydraulic brakes provide the last word in safety. Trunk space is larger by 50 per cent. Power and acceleration have been stepped up again. But the prices on these big, Silver Streaked beauties make Pontiac an even better value than before. And economy is 10 per cent greater than that of last year's Pontiac—official economy champion of its price-class!

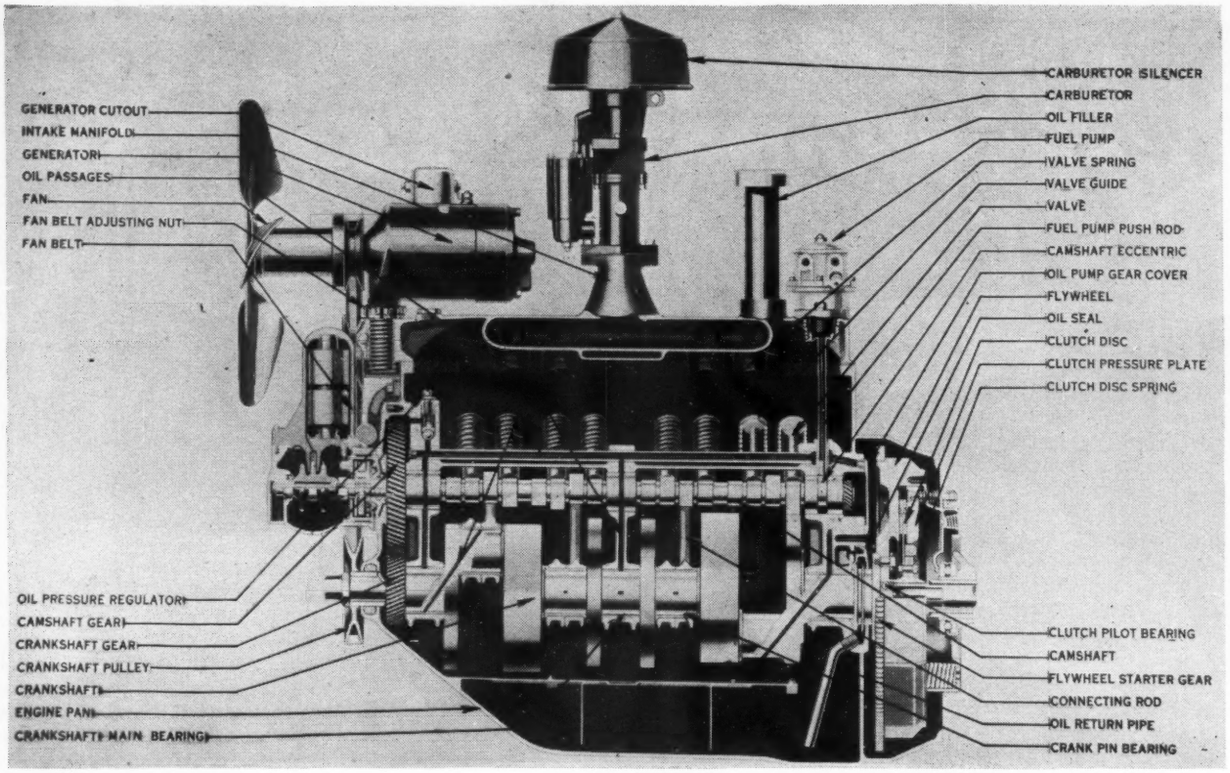
Such accurate forecasting of buying trends has increased Pontiac's sales and dealers' profits for two successive years. There is every reason to expect even greater results this year. Because everything points to Pontiac as America's finest low-priced car, *and that's exactly what America wants for 1937!*

Pontiac

AMERICA'S FINEST LOW-PRICED CAR

Pontiac's recently announced new policies of territorial protection against cross-selling and of larger sliding scale discounts, are additional reasons why the Pontiac franchise should appeal to dealers in now open territory. If interested in the Pontiac franchise, write personally to C. P. Simpson, Vice-Pres. and General Sales Mgr., Pontiac Motor Co., Pontiac, Michigan, and your inquiry will be treated as confidential.

A PRODUCT OF GENERAL MOTORS



Ford V-8 Engine

(Continued from page 54)

field terminal but set the charging rate at the generator at a car speed of approximately 27 miles per hour, the result will be approximately 12 amps. with a hot generator.

My suggestion would be that you carefully check the cut-out relay to see that it is operating properly. To do this, it is necessary that you use a voltmeter with a zero to 10 volt scale graduated in tenths of a volt in order that you may get a close accurate reading. The circuit breaker point should close when the generator voltage goes up to 7 or 7.4 volts and should open at a discharge not to exceed 1 ampere. The generator should start charging at a car speed of approximately 8 miles per hour. If the cut-out relay points do not close when the generator is putting out 7 volts, it will account for the armature burning.

The same type of generator is used on the 1935 Master model and I would suggest that you advise the doctor to pull the lighting switch out to the first position while driving during the day. With the switch in this position, the resistance unit on the back of the lighting switch is cut out of the circuit so that the maximum generator charge is delivered to the battery. The resistance unit on the back of the lighting switch is furnished in three sizes and I would suggest that inasmuch as a one ohm resistance is standard equipment, that you change this unit to one of ¾ ohm resistance. This part is supplied by Chevrolet under their part Number 817911. I notice that you have set the third brush in this generator over as far as it will go and I would suggest that you reset it so that there are two commutator bars between it and the positive brush. Otherwise, you may run into difficulty either with an overcharged battery or a burnt out generator. If you are getting only a 5 amp. charge out of this generator with the field terminal grounded, there is evidently something wrong within the generator itself and I would suggest that you have it overhauled.

Uses One Quart of Oil Every Ten Miles

I would like you to tell me if it is possible to stop an oil leak past the rear main bearing of a Ford V-8, and if so how? That is, some other way besides an engine exchange or repouring the bearings. The oil started to go by right after I installed a set of new rings. I get only 10 miles to the quart. What could be the relationship between the new rings and the oil leak? I know the gaskets are good. I know the oil goes past the main because it drains out through the bottom of the clutch housing. It is a 1934 V-8 motor No. 18-735418. Chris Sauer, Sweet Bros., Chico, Calif.

I SEE no relation between the installation of new rings and the oil leak except that you must have damaged the rear main bearing oil return pipe when you put the job back together. I have heard of cases in which the oil return hole in the bearing cap would get plugged up and I have also heard of cases where the return pipe had been bent so that the oil could not return freely from the bearing. There is also the possibility that there is a break in the baffle immediately ahead of the flywheel which is allowing oil to get back into the clutch housing.

It is quite evident that if this job did not leak oil before you tore it down and if the only work you did was to install new rings, something must have happened when the job was reassembled that has interfered with the return of oil from the rear bearing.

I suggest that you pull the oil pan and examine the oil return pipe for being damaged. Also, check the baffle and the rear bearing oil seals.

(Continued on page 58)

When Trouble Troubles You—

Write the Readers' Clearing House, a question box provided readers of MOTOR AGE, for an open discussion of everyday mechanical problems. Thousands write us every year. You, too, can take advantage of this practical service—and it costs only a postage stamp. Don't cuss, write us.

SILENT SALESMEN



PLACE ONE IN EVERY CAR AND TRUCK!

● They will work for you without salary or commission—pre-selling a great many customers if you will only distribute them.

New and Interesting Folders and Circulars That Will Sell Weed Chains for You

Get a supply now from your Weed Chain jobber. They cover your whole Weed Chain assortment—Weed American Bar-Reinforced, Weed regulars, Weed emergency units—for passenger cars, trucks and buses.

Weed Chains are best known, most heavily advertised. They give a better profit because easy to sell at list. Conveniently packed in bags, easy to handle and display. Your wholesaler has a complete assortment now—order before the rush. These sales helps start the sale—you complete it by asking your customers to buy.

AMERICAN CHAIN COMPANY, Inc.
BRIDGEPORT, CONNECTICUT
In Business for Your Safety

MAIL THIS TO YOUR JOBBER

Please send me—folder describing Weed Chain Profit Pack.

Name .....

Address .....

City ..... *State* .....

Licensed to manufacture and sell Bar-Reinforced Tire Chains under United States and Canadian Letters Patent: American Chain Company, Inc.; The McKay Company; The Hodell Chain Company; Pyrene Manufacturing Company; Dominion Chain Company, Limited; and Pyrene Manufacturing Company of Canada, Limited.

"Gunga Din" Solves Another Problem

You're a better man than I am "Gunga Din" if you can lick this one.

Recently, a man from a near-by town brought his 1934 Plymouth in for a clattering or fluttering metallic noise in the motor. He had recently had the valves ground in a reputable service station and claims this noise showed up at that time. It sounded somewhat like an exhaust manifold damper but holding the outer lever did not change the noise. It sounded also as though an intake port tube might be loose but investigation showed there to be no tubes to get loose and at the same time proved the exhaust damper to be securely welded to its shaft. Motor runs with belt off and fuel pump off—muffler seems and sounds O.K.—no broken valve springs and none appear weak—no unusual noise in ignition, oil pump or front gears. It is so pronounced when the motor is slowing from a slight acceleration, you would be exasperated because you could not reach right out and take it in your hand—it seems that simple.

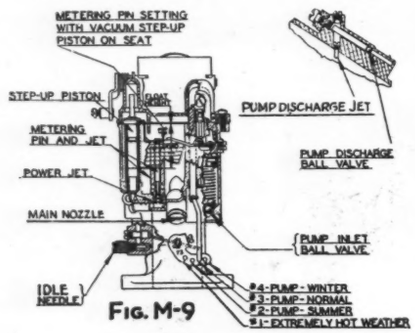


FIG. M-9

Diagram of Plymouth Carburetor

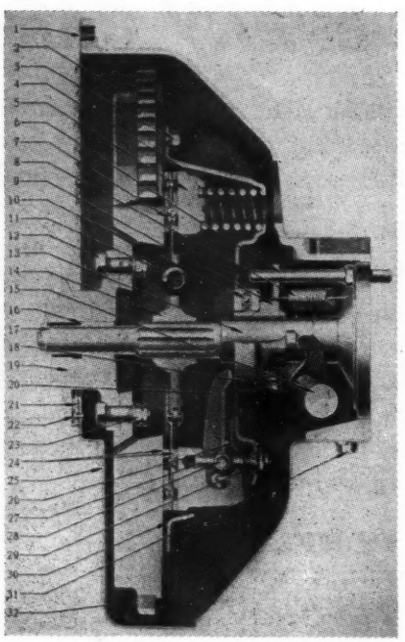
Before touching it, I advised the owner to go to a Plymouth service station in Portland, as they probably could tell exactly what it was. He spent several hours there but came back to me and I looked it over as before mentioned. Have not seen anything bearing on a like problem in your columns.

This car has another noise—one would say it was a high tension jump at the coil as it is just such tempo and is steady with the motor. Apply the ear lightly to the gear shift lever and it is very distinct—something like a broken clutch anti-rattler spring but could not feel anything in the clutch. It has just struck me as possible that it might be the high tension ground that is bad.

Dig around in your files—if you have anything bearing on this trouble, let me know. Arthur C. Soule, Soule's Garage, South Windham, Me.

I BELIEVE you will find this trouble is due to the washer on the top of the step-up piston in the carburetor having become hard. This washer, or gasket, will chatter and produce a noise similar to a loose manifold heat control valve. The remedy is to install a new type washer, the Carter part number of which is 20-37. If you do not have this particular washer, then remove the old washer now in the job and install two washers of the same kind.

There are other conditions, of course, that could give you this same noise, one of them being a loose baffle in the air cleaner and the other a loose butterfly valve on the throttle shaft in the carburetor. You might check these points also but I believe the main difficulty is in the carburetor step-up piston washer.



Plymouth Clutch



"Blessed event, my eye. These are slip covers for the coupe."

The second part of your letter dealing with a noise that apparently comes from the clutch, might be caused by the clutch release bearing sleeve pull-back spring (No. 8 in the accompanying illustration) having been left out at some time when the clutch was overhauled. It is very difficult to remove and reinstall this spring and it is quite often left out by the mechanic who puts the job up because it is too hard to get back in place. Without this spring the clutch release bearing is allowed to float against the clutch release levers and will cause a noise similar to that you describe. By removing the clutch housing pan, you can readily see whether this pull-back spring has been omitted.

When Engine Is Hot It Won't Start

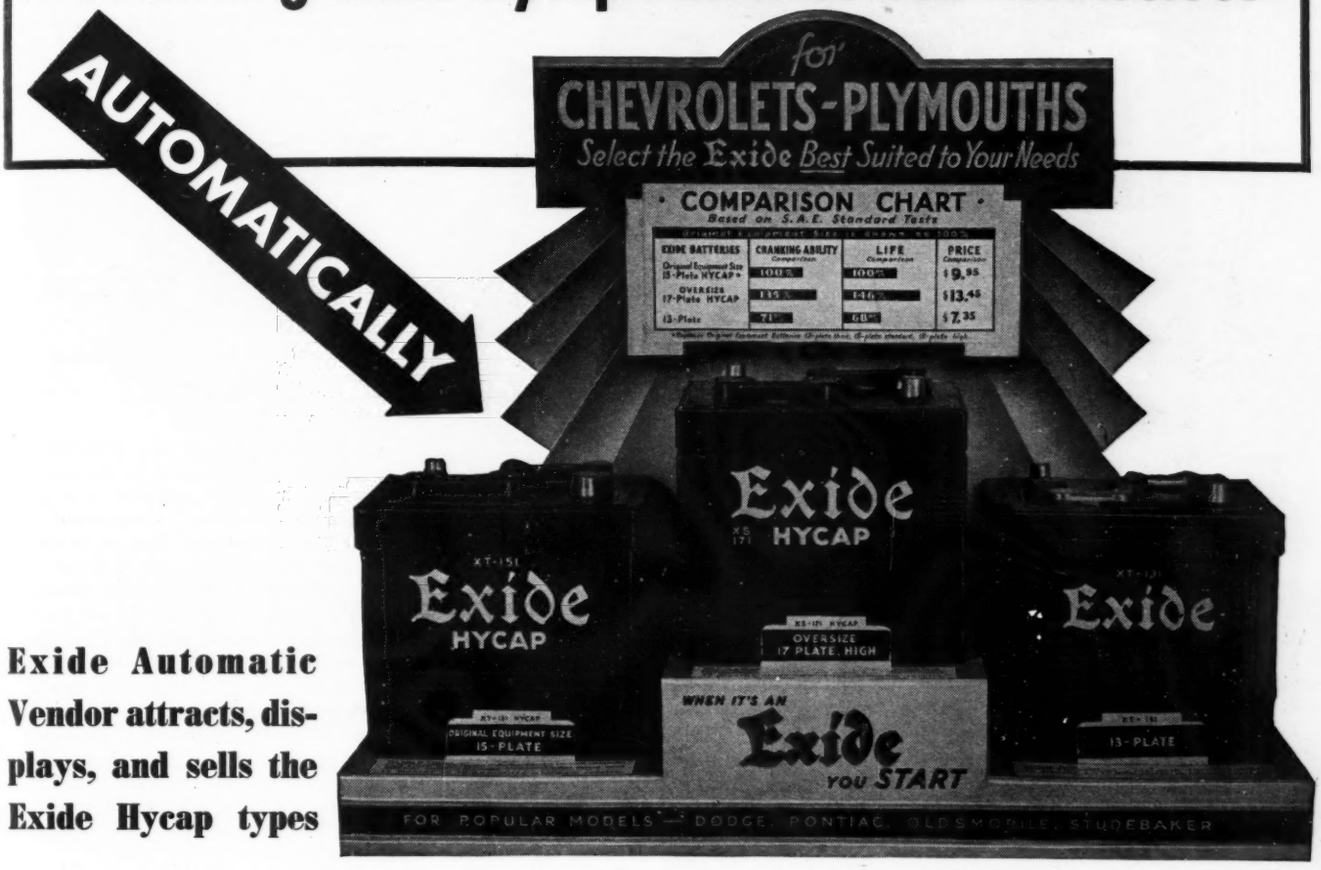
One of my customers has been having trouble with vapor-lock on a Model 73—1935 Graham. This car didn't give him any trouble last summer but has given plenty this summer and is still giving trouble. If the motor is stopped for several minutes after it has been driven several miles, it will start and burn out the gas in the carburetor and then stops and will not start until fuel line at carburetor is disconnected and gas sucked out of line on pump, or pump cooled off.

Is there any remedy for this trouble? I suggested installing an electric pump and leave out the present pump.

Do you think an electric pump mounted away from the motor would remedy the trouble? If so, where can I get one? L. R. Jennings, Prairie City, Iowa.

(Continued on page 60)

Already! 13,478 Dealers
are letting Exide Hycap Batteries sell themselves



Exide Automatic Vendor attracts, displays, and sells the Exide Hycap types

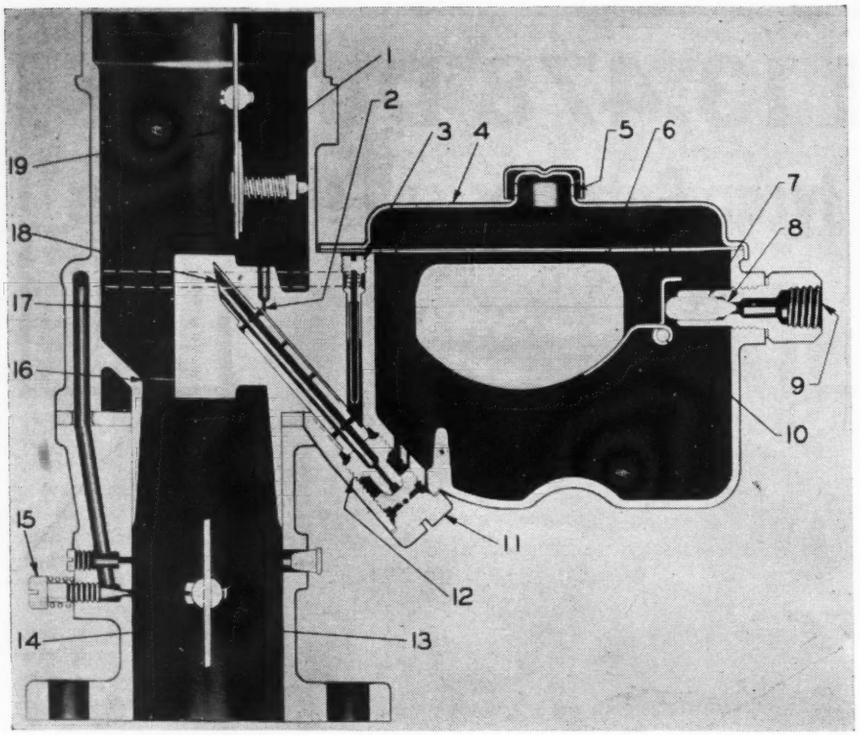
YOU'VE often heard of merchandise that "sells itself"—and you know that Exide Batteries come as close to doing it as anything you could put on your shelves. But here's something that automatically sells the high profit Exide Hycaps—the Exide Automatic Vendor, which has proved its phenomenal success in the hands of 13,478 dealers!

It displays side by side the batteries that fit a particular car. It shows the original equipment size. It prices the batteries. It describes the service for which each battery is built, compares them on the basis of cranking ability, life and price—and shows by direct comparison the greater values in the Exide Hycap types. Most important of all, it makes up the customer's mind and practically closes the sale—single-handed—for the Exide Hycaps.

Right today, two months after being introduced, the Exide Automatic Vendors are bringing a flood of sales and profits to 13,478 dealers—and keeping the better grade (bigger profit) Exides out in front. One Automatic Vendor features batteries for Chevrolets, Plymouths and others—the other covers Fords, Terraplanes and additional makes. Together, they take care of 86% of the car market. See your Exide Wholesaler without delay, or get in touch with us.



THE ELECTRIC STORAGE BATTERY CO.
Philadelphia
The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto



Sectional view of Stromberg Carburetor

(Continued from page 58)

ALTHOUGH your letter calls this a condition of vapor-lock, the description you give does not really cover such a condition. Vapor-lock is a term used to describe a condition of starving the carburetor during hot weather and at relatively high speed driving. It is caused by the gasoline vaporizing in the line between the fuel pump and the carburetor, although it can be caused by vaporizing in the main line from the gas tank to the fuel pump.

The condition you describe, while it has some of these characteristics after the car has stopped, is really a boiling condition in the carburetor whereby the gasoline is allowed to percolate through the main discharge jets and cause a flooding condition in the intake manifold.

The first point to check in correcting a condition of this kind is the fuel level in the carburetor bowl. This should be set at ⅝ in. from the top edge of the bowl, provided regular gasoline is used. If high test gasoline is used, the level should be slightly lower or about 11/16 in. The second step is to install a heavy gasket about ½ in. thick between the carburetor and the intake manifold. This will have a tendency to keep the carburetor cooler. The third step is to install a metal shield above the fuel pump to protect it from the heat radiated by the exhaust manifold. This shield can be formed in such a way as to direct the air stream from the fan onto the fuel pump in addition to protecting the pump from the manifold heat. I feel sure these three points will be of material assistance to you in correcting this rather unusual condition.

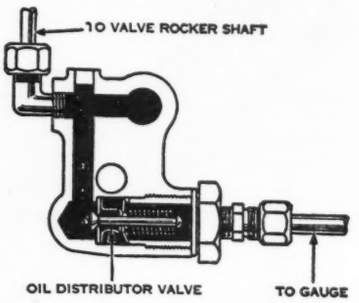
No doubt an electric fuel pump would be of some assistance, although I do not believe you will find it necessary after making these corrections.

Wants Help on Oil Distribution Problem

As a reader of your magazine, I would like to have this question answered. How to remedy the absence of oil through the rocker arm oil pipe on a 1932 Chevrolet?

This engine is in very good shape and it has acted this way ever since the owner has had the car. The oil pressure on the gage is normal and I have cleaned the oil pipe with air. Paul DeWees, Montrose, Pa.

THERE is evidently some obstruction in the system from the oil distributing manifold to the rocker arm shaft. It is possible that the oil distributor has been removed at some time or another and when it was reinstalled, the gasket blocked off the



Oil distributor

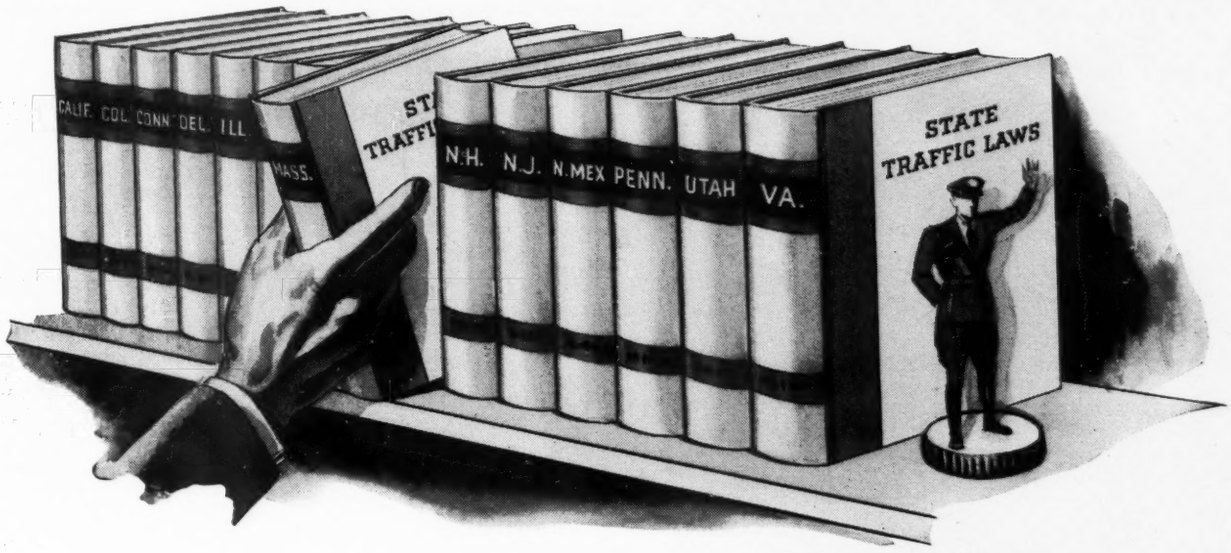
low pressure side of the distributor from which oil is passed to the rocker arm shaft. I would suggest that you go through this distributing manifold thoroughly to be sure that it is clear and that you follow the system up through the delivery pipe and through the rocker arm shaft. If the oil pump is delivering normal pressure as indicated by the gage, it seems to me that there is nothing else that can happen except that some obstruction has been set up in the system and that it is only necessary to clean it out thoroughly to have a sufficient quantity of oil delivered to the rocker arm shaft.

IF it becomes necessary to remove the heat indicator from the dash of the 1936 Studebaker models, the battery or ammeter cable should be disconnected to prevent the possibility of short-circuiting the ammeter.



"It's for the folks who get their tires from the mail order companies"

OFFICIAL CAR INSPECTION IS ON THE WAY *everywhere!*



15 STATES...

already order it by law!

BEFORE very long, periodic brake and chassis inspection is going to be demanded throughout America. That's going to mean more brake renewal business, more steering adjustments, more repairs and replacements of critical chassis parts.

Where's this business going?

Why, it's going to *the shops that are best equipped to handle it.*

How about *your* shop? Why not get set to draw your share of this new *flood* of business that's positively on the way? Truck fleet operators, insurance companies, public safety authorities are serious about it. They're insisting. Don't let this opportunity catch you off base.

Bendix builds every piece of chassis testing and corrective equipment you need . . . sells it in single units . . . sells it on *very* easy terms. Car factories use it for final new-car tests. Cities use it for public safety lines. Progressive shops all over the world use it to make friends and make money. Get the new safety literature. Use the coupon.

BENDIX PRODUCTS CORPORATION
(Subsidiary of Bendix Aviation Corporation)
401 BENDIX DRIVE, SOUTH BEND, INDIANA

BENDIX

SAFETY SHOP EQUIPMENT



Above: Tests wheel alignment and steering with utmost precision.

Below: Tests brakes under electric power . . . shows up "out-of-round" drums. Tests tractor and trailer trains.



BENDIX PRODUCTS CORPORATION
401 Bendix Drive, Dept. 11, South Bend, Indiana

Please send full information regarding the Bendix Official Car Inspection Equipment.

Name .....

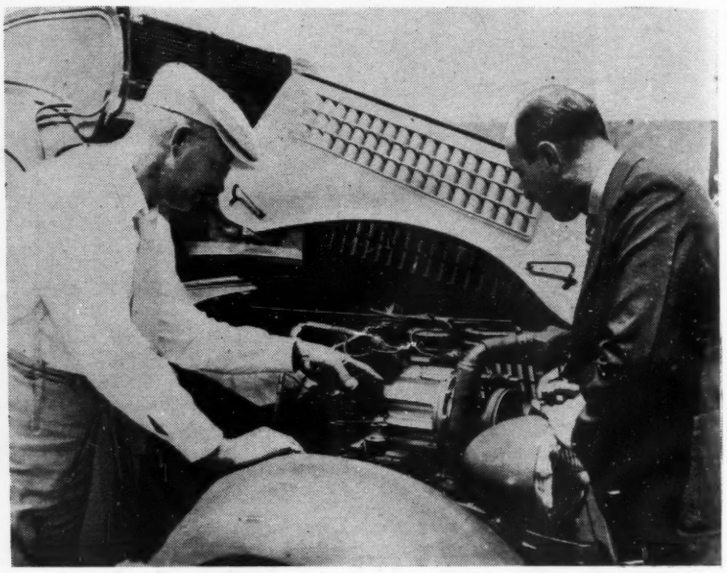
Address .....

City ..... *State* .....

Nature of Business .....



THE Wheel of Fortune (left). This interesting show-time display used by the Asbestos Manufacturing Co., makers of AMCO brake linings and clutch facings is now being made ready for the A. S. I. Show at Chicago. Amco's chief engineer, Robert Kohr, is supervising the work. (Below) P. W. McCullough of Kansas City (left) points to the compressor of the air-conditioning equipment he has installed in his Ford V-8 sedan. The device is his own invention, and it is said, keeps air inside the the car 20 degrees cooler than outside temperature (in summer time, of course!)



Roosevelt Raceway Gets Labor Day Race Sanction

The Roosevelt Raceway at Westbury, Long Island, has been granted Labor Day, September 6, on the International Calendar of important racing events for 1937, according to the Contest Board of the American Automobile Association.

The Sporting Commission of the International Association of Recognized Automobile Clubs—world-wide tribunal of the sport—approved the Labor Day application of the Roosevelt Raceway management during the Commission's annual meeting in Paris last month.

The Labor Day date will take the place of the Columbus Day running 400-Mile International Sweepstakes next year. In addition to the Labor Day classic, the Raceway is already making plans for a Pan-American Sweepstakes next July 4. This event, present arrangements indicate, will be restricted to entrants from North and South American countries.

Few Changes Expected In Tire Prices and Discounts

Having enjoyed almost a full year of the most effective price stabilization in the industry's history, tire manufacturers plan a renewal of the present price program without any material change either in retail prices or dealer discounts. This decision was reached at a recent meeting of tire company executives in New York under the auspices of the Rubber Manufacturers Association. The only probable change in the program may be a realignment of discounts to preferred national accounts, it is understood, with these elevated to the same level as commercial prices. Commercial accounts have been receiving a 10 per cent discount from list prices while preferred national accounts have been receiving a 22½ per cent discount which was equivalent to dealers' net billing. The attempt to standardize all heavy duty prices at the commercial level will be made to correct discount abuses in this sector of the market, manufacturers state. In many markets dealers have been quoting commercial prices at the preferred national basis.

The industry is expected to announce its usual spring dating program under which solicitation of dealer orders will be started Nov. 15 for 1937 delivery on deferred payment bases controlled by climatic zones of the country.

Brake Wedge Shims For Ford Cars

The L. F. Kreger Mfg. Co., Chicago, Ill., has announced brake wedge shims for taking up wear in the brake shoe spreader rod of Ford brakes. They are said to be easy to install and to simplify adjustment, and will assist



in eliminating chatter. Packed 100 in a single convenient metal container.

Industry Awaits A.S.I.S.

Automotive manufacturers and their jobbers are pointing to this year's Automotive Service Industries Show to be held at Chicago's Navy Pier, Dec. 9-13.

Attendance is expected to be greater and, in the opinion of many, this year's show will surpass all others in serving to promote more profitable business for the maintenance industry through the exhibits of new merchandise and the presentation of new merchandising ideas.

The show is sponsored jointly by the Motor and Equipment Manufacturers Assn., the National Standard Parts Assn. and the Motor and Equipment Wholesalers Assn.

Hoyt Products Organized

Ray Jesselson, in addition to his activities as a manufacturer's agent in the East, has formed the Hoyt Products Co., 245 West 55th St., N. Y. C., and is acting in the capacity of sales manager.

The Hoyt Products Company is marketing the new "Jif-E-On" license plate locking fastener, on which patent applications have been filed.

"Jif-E-On" is instantly installed without any tools and makes a permanent positive fastener for plates—no bolts or nuts to work loose, and its unique construction eliminates all rattles—chrome plated, guaranteed rust-proof—attractive display cards of four and forty.

The New Departure Mfg. Co., Bristol, Conn., has prepared a wall chart on the lubrication and adjustment of front wheel bearings which they will be glad to supply without cost to anyone writing their Advertising Department.

Changing: the All-American Menace



THIS MAN drives automobile dealers crazy. He's the carping, complaining, hyper-critical fellow who finds *everything wrong* with his brand-new car.

He'll hear knocks where you can't catch a murmur. He'll say the car lacks power when it would haul an elephant up the toughest hill in your part of the county.

Fortunately, there aren't many like him. But a few "beefers" can do a lot of harm.

Often a potential "beefer" can be turned into a booster—and lukewarm owners fanned into red-hot enthusiasts, *if you give the car an extra-swell send-off.* And that, to many dealers, means this . . .

See that the crankcase is filled with the world's finest motor oil—*Gulfpride.* There isn't another oil made that can do so much to keep a good motor good. This 100% Pure Pennsylvania Oil, thanks to Gulf's exclusive Alchlor process, forms only *one-fifth* as much carbon as the next best oil made.

And in the tank put Gulf No-Nox Ethyl, *Aviation Grade Gasoline.* It makes a fast car faster. It gives an owner "throttle thrill." It puts a world of extra power beneath that brand-new hood.

Do this, and you've got another customer who's going to grin and gossip—and get his friends in the mood to buy your cars.

Fill out the coupon and get the complete Gulf story. Send for a FREE copy of a brand-new book, "You Can't Call It Luck!" It tells why doing business with Gulf is profitable to you. Mail the coupon today!

GULF

GULF PETROLEUM PRODUCTS



MA-116

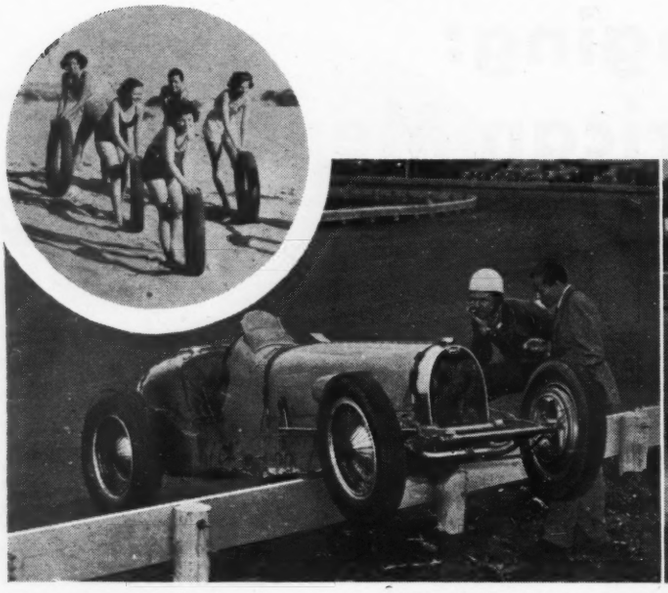
GULF,
3800 Gulf Building,
Pittsburgh, Pa.

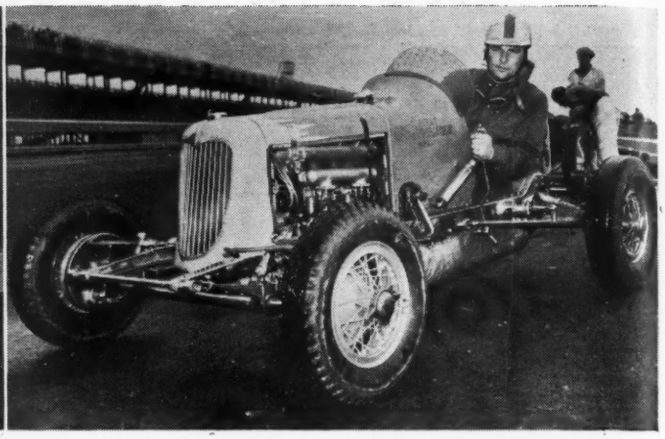
Please send me a FREE copy of your new book for dealers, "You Can't Call It Luck!"

*Name*_____

*Streeet*_____

*City*_____ *State*_____





UNCHANGED
That's the latest word on 1937 tire prices, while the ladies in the upper circle are apparently celebrating the good news.

REASON WHY Lou Meyer, three-time Indianapolis winner didn't compete in the revived Vanderbilt Cup Races. This picture shows the reason why, for Lou crashed into the guard rail, damaging his Bugatti Special, during time trials.

SMALL JOB
One of the smallest cars entered in the Vanderbilt Cup Races was this midget Offenhauser, with Louie Tomei at the wheel.



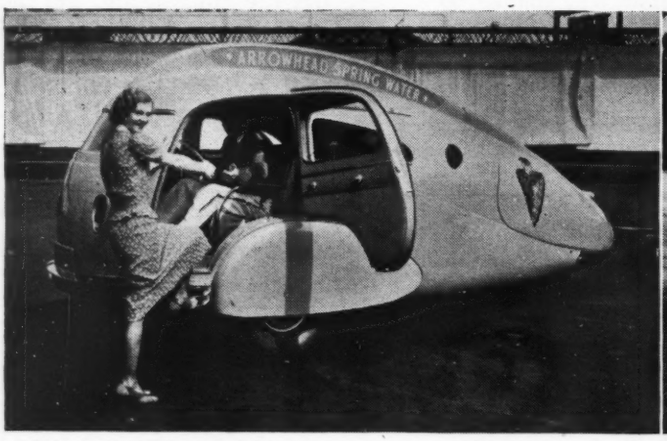


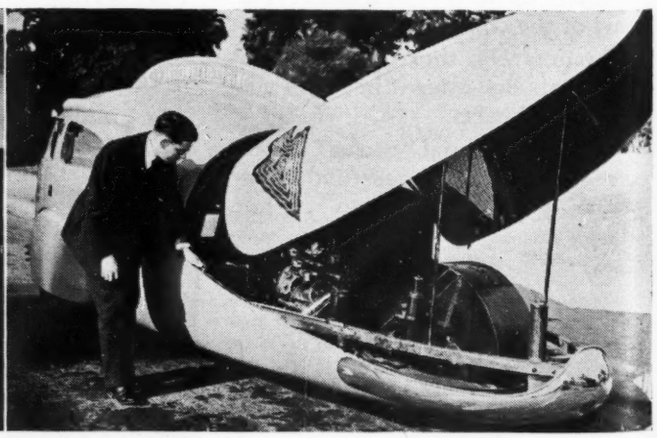


YOUNG LORETTA
Loretta Rabbitt of St. Louis is perhaps the youngest of her sex to own and operate a service station. She is eighteen.

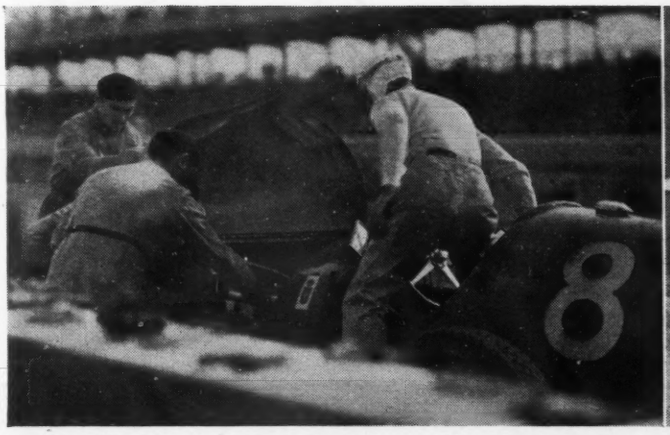
LORETTA YOUNG Attractive movie star finds that an automobile trailer makes ideal living quarters while out "on location." This photo was made during the filming of "Ramona" in which Miss Young is starred.

TEPEE At the foot of Pike's Peak, Colo., is this unusual looking super service station, constructed in the manner of an Indian tepee.

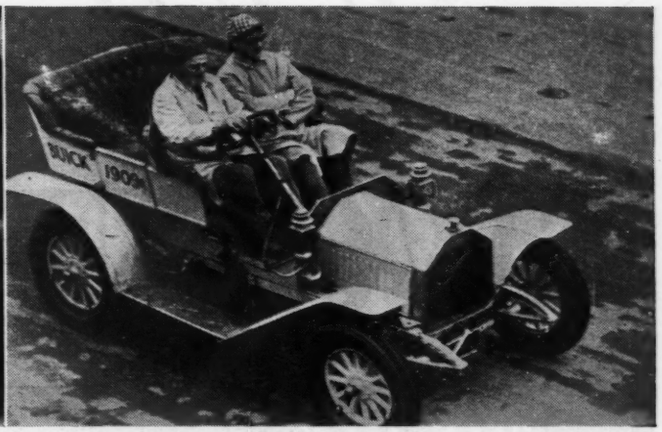




TEAR-DROP The Arrowhead tear-drop car, built by the Advance Auto Body Works, Inc., of Los Angeles, was recently introduced. Seating three passengers, this streamlined car is powered by an eight cylinder engine mounted at the rear. A three wheel job, the car is steered by the third wheel in the rear, which is mounted within a turret housing set at eight degrees caster. All three wheels are fitted with Lockheed hydraulic brakes. Wheelbase is 126 in. and overall length, 204 in. Its speed is 80 m.p.h.



NUVOLARI PAUSES Very briefly did Tazio Nuvolari stop at his pit on Columbus Day at the Roosevelt Raceway. This picture was snapped as he left his car momentarily during a change of spark plugs. Incidentally, his pit crew changed six plugs and refueled in 1 min. and 30 sec. flat.



OLD TIMERS Here is the winner of the Old Timers' Race, a preliminary event at the Roosevelt Raceway. The winner is none other than Louis Chevrolet, driving a 1909 Buick, with Jack Krindler, of Jack & Charley "21" Club, New York, as his riding mechanic.



BACK TO EARTH Here is the Air Commerce Bureau's new roadable Autogiro. With an engine mounted in the center of the fuselage, the plane shows how it can travel the highways under its own power, at Willow Grove, Pa. Jimmy Ray, test pilot, flew the first of this type to Washington, D. C., driving it on both land and air.



GADGET Harry Miller, graduate of U. C. L. A., demonstrates his new rotary motor which acts both as propellent and brake when placed on the front wheel of a car.



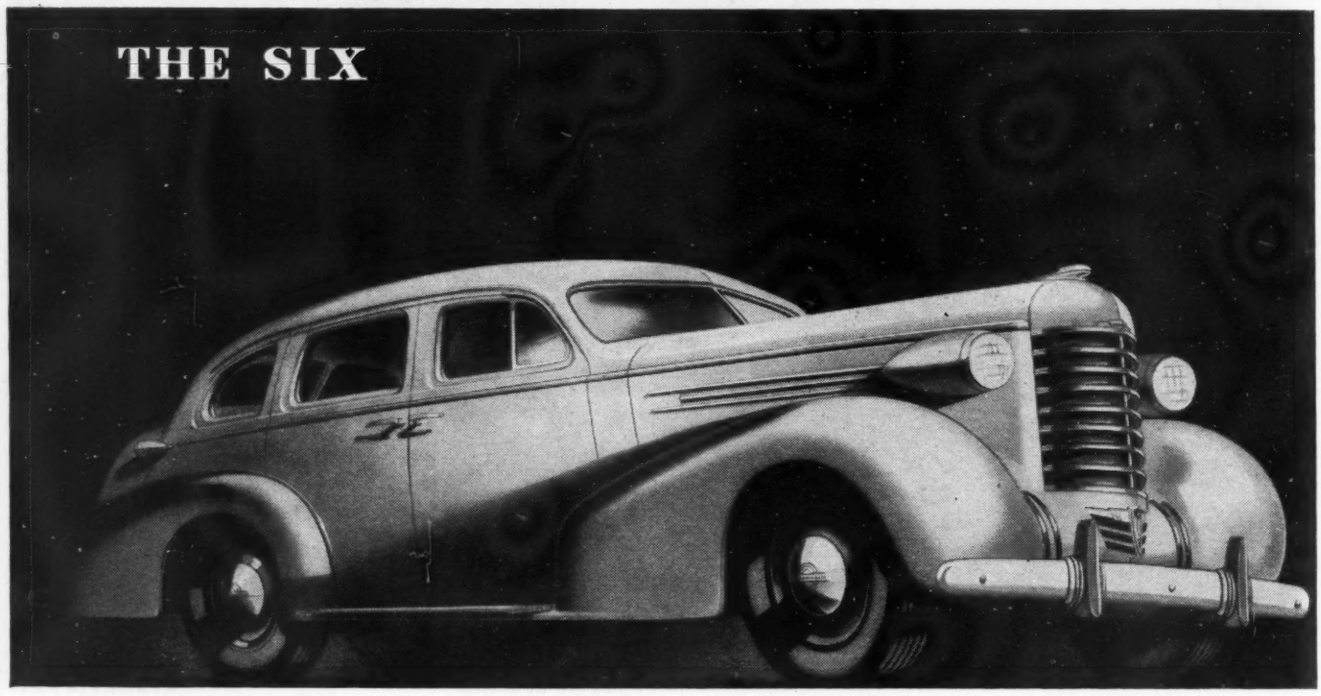
GRANDPAPPY Shades of the gay nineties! Here's the grandpappy of them all, overhauled and prinked up by Hollywood mechanics for a job in the movies. The picture of the old-time horseless carriage was made recently on the Paramount Studio lots.



DARK AFRICA Past and present methods in transportation are brought together in this photo, taken at Accra, French Africa. Slowly, foot by foot, using their age-old method of barge and oars, the natives move the crated Chevrolet toward shore.

Oldsmobile sets

TWO NEW OLDS



Each Bigger, Finer and Safer Than Ever

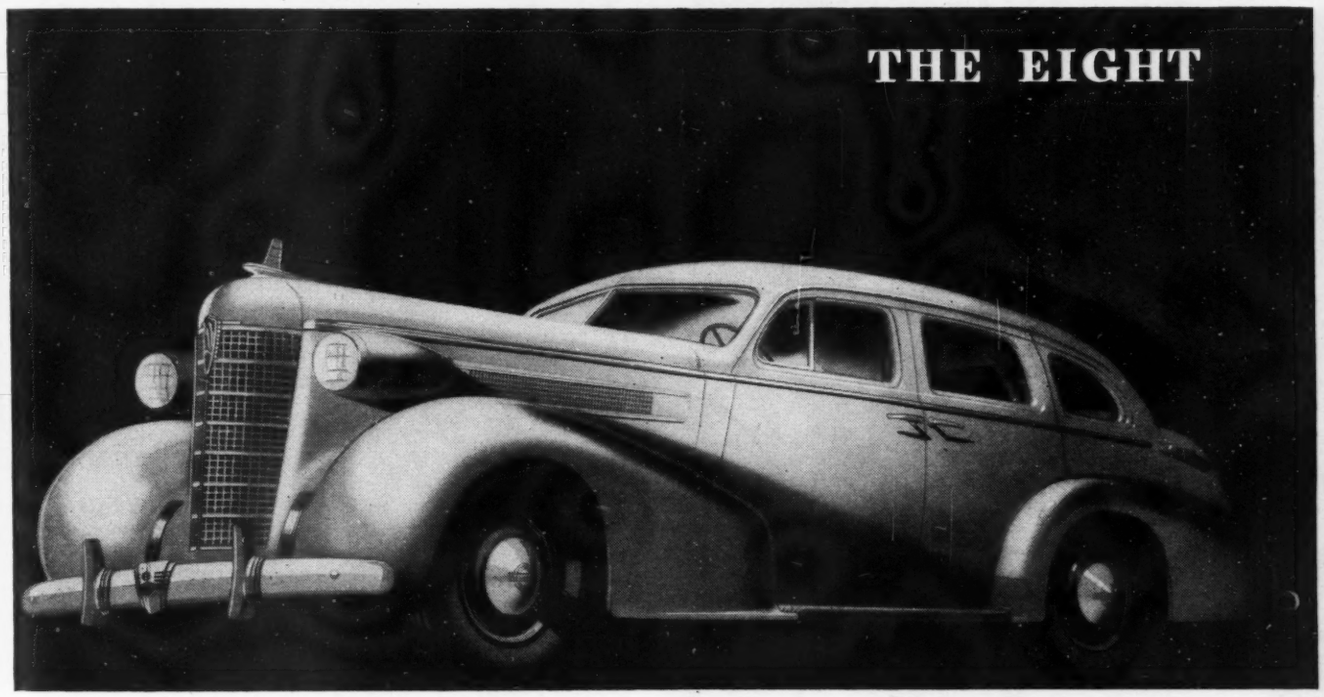
BOTH FEATURING: FRESH, NEW STYLE-LEADER STYLING • LONGER WHEELBASE LARGER SIZE • ROOMIER BODIES • LOWER FLOORS • STRONGER CHASSIS • HEAVIER FRAMES • BIGGER ENGINES • HIGHER POWER • EXTRA SAFETY • GREATER ECONOMY • AND OLDSMOBILE'S TRADITIONALLY FINE QUALITY.

TWO BIG NEW CARS . . . two fresh new styles . . . two great new values! In the distinctive new Oldsmobile Six and the distinguished new Oldsmobile Eight, Oldsmobile dealers today have products which appeal to a bigger and wider market than ever before. The 1937 Six . . . with its smart, modern lines and 117-inch wheelbase . . . is certain to win many more buyers from among the prospects for lowest-priced cars. The 1937 Eight . . . notably finer and more luxurious and built on a chassis of 124-inch wheelbase . . . is sure to attract additional

THE CARS THAT HAVE

the pace again!

MOBILES for 1937



. . . Each With a Style Distinctly Its Own!

buyers who have previously paid much more for cars of similar size and comfort. The new Six has been aptly termed, "The Big Low-Priced Car of Extra Quality". . . the new Eight, "The Fine Car of Popular Price." As such, they offer Oldsmobile dealers their greatest sales and profit opportunity in many successful years. For Oldsmobile is backing these two great cars with the greatest merchandising and promotional program in its entire history. From coast to coast, the word is going: "It's Oldsmobile that sets the pace again!"

BOTH FEATURING: NEW UNISTEEL BODIES BY FISHER WITH TURRET TOP NEW TRIPLE SEALED SUPER-HYDRAULIC BRAKES • CENTER-CONTROL STEERING NEW DUAL RIDE STABILIZERS • PROVED KNEE-ACTION WHEELS • UNOBSTRUCTED FLOORS • AND MANY OTHER FINE-CAR FEATURES.

EVERYTHING FOR 1937

Los Angeles Race Postponed

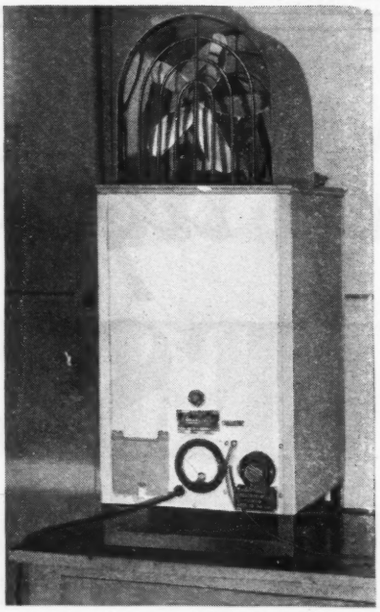
The new Los Angeles Raceway, instead of closing the 1936 season on November 29, will open the 1937 campaign on March 28, 1937, it has been announced by the Contest Board of the American Automobile Assn. One reason given for the postponement was the change in locale for the race course. The site now selected is on Ceritas Boulevard adjacent to the Long Beach Airport, between Los Angeles and Long Beach.

Grease Makers Meet

The National Association of Lubricating Grease Manufacturers met at its fourth annual convention in Chicago last month. The program of discussions covered both the engineering and merchandising phases of the industry. Outside organizations which have been studying lubricating problems also had a part in the program.

Electroaire Ozone Unit Combats Garage Gases

To counteract the effect of garage gases on workmen and on customers, the Electroaire Corp., Chicago, Ill., has introduced a new Electroaire Ozone Generating Unit designed to set on a bench or shelf. Installation consists only of locating the unit and plugging into a light socket. The unit generates ozone and distributes it into the air of the room by means of a propeller type fan mounted on top of the cabinet. The exhaust gases react with this form of oxygen so that no ill effects are noticed by those who are obliged to breathe them. Since ozone



cannot be stored for any length of time it is necessary to generate it in the room in which it is to be used. Because different shops offer different operating problems, Electroaire has designed special ozone generating units to meet the requirements of every possible operating condition.

Brake Lining Makers Hold Annual Meeting

The Brake Lining Manufacturers' Association at its annual meeting, October 7, in New York City, elected the following officers for the coming year:

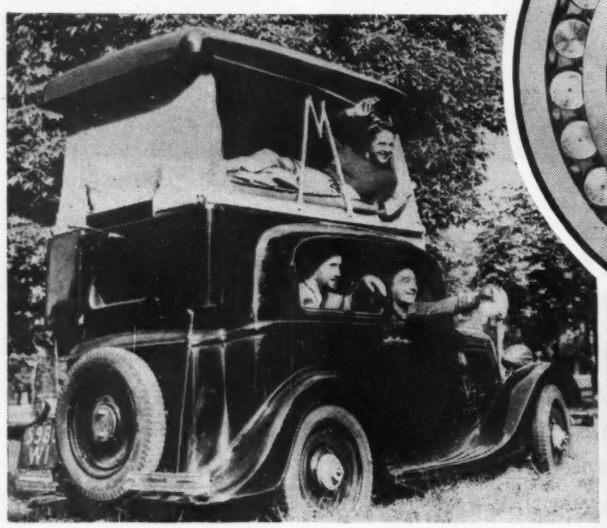
President, F. E. Schluter, President of Thermoid Rubber Co., Trenton, N. J. First Vice-President, T. L. Gatke, President of Gatke Corporation, Chicago, Ill. Second Vice-President, A. B. Kempel, President of Rex-Hide, Inc., East Brady, Pa. Treasurer, C. M. Piper, General Manager, Automotive Commodities, Johns-Manville Corp., New York, N. Y. Secretary, General Manager and Assistant Treasurer, C. A. Ekwall.

Members of the Executive Committee include the above officers and the following: H. A. Gillies, Vice-President of American Brakeblok Corp., Detroit, Mich. G. M. Williams, President of Russell Manufacturing Co., Middletown, Conn. M. F. Judd, General Manager of Raybestos Division of Raybestos-Manhattan, Inc. W. C. Dodge, Jr., of Keasbey & Mattison Co., Ambler, Pa. W. G. Kitchen, President of Allbestos Corp., Germantown, Philadelphia, Pa.

Dr. C. F. Burgess, president of the Burgess Battery Co., Chicago has announced the purchase of the controlling interest in the Thordarson Electric Manufacturing Co., Chicago.



BEAUTY smiles through one of the largest spherical roller bearings in the world. Built by SKF, its dimensions are 46½ in. outside diameter, 27½ in. bore and 15⅛ in. width.



PARIS comes forward with what should be a boon to automobile-tourists, in a double automobile roof, which when lifted, forms an "upper berth" as shown above.



MRS. EDITH M. CUPPAGE of San Francisco (right) is said to be the only woman in the United States engaged in building airplanes. She is assisted by her son in the construction of a new type amphibian.

At least 127 DAYS TO SPRING

NOW'S THE TIME TO BUILD YOUR ETHYL BUSINESS



REMEMBER LAST WINTER? Another long, tough one is just ahead. That means *hundreds* of cold starts . . . *thousands* of slippery miles *for your customers.* Tell them the comfort, safety and quick starting you have for them in your Ethyl pump . . . they want it. This advertisement in color in leading magazines will help you build Ethyl business now. And remember — Ethyl buyers are better customers for every high-grade product and service you sell — *more* profitable customers to you. Talk up Ethyl now.

SIGN OF THE BEST WINTER GASOLINE

STARTS QUICKER . . . AND STOPS KNOCK

ETHYL

ETHYL GASOLINE CORPORATION

(Contains tetraethyl lead)

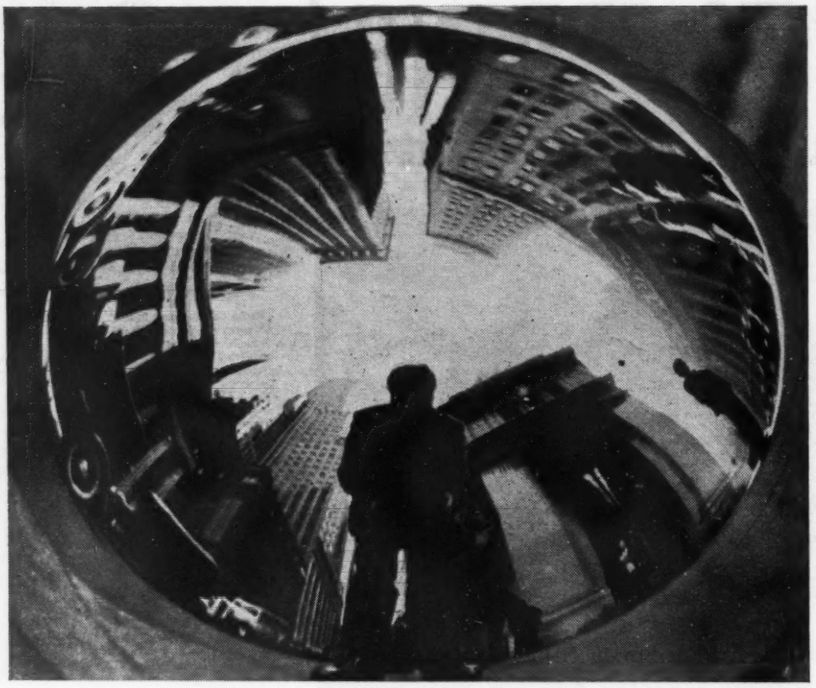


"This winter use Ethyl"

SOLD BY THESE 117 OIL REFINING COMPANIES, MORE THAN ONE HUNDRED THOUSAND DEALERS, AND MORE THAN TEN THOUSAND JOBBERS!

IN UNITED STATES

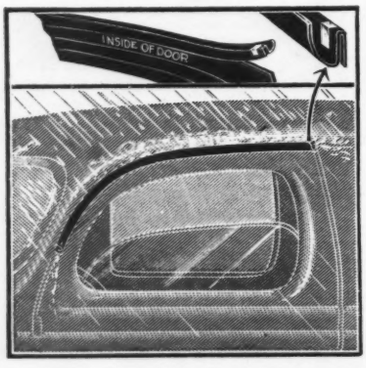
Aetna Oil Service, Inc.
Allegany Refiners, Inc.
Allegheny-Arrow Oil Co.
American Oil Co.
Anderson-Prichard Refining Corp.
Arro Oil & Refining Co.
Ashland Refining Co.
Associated Oil Co.
Atlantic Refining Co.
Atlas Pipeline Corp.
Barnsdall Refining Corp.
Bell Oil & Gas Co.
Bradford Oil Refining Co.
R. R. Bush Oil Co.
Caminol Company, Ltd.
Canfield Oil Co.
Chalmette Petroleum Corp.
Champlin Refining Co.
Cities Service Oil Co.
Cities Service Refining Co.
Colonial Beacon Oil Co.
Col-Tex Refining Co.
Continental Oil Co.
Continental Refining Co.
Crystal Oil Refining Corp.
Cushing Refining & Gasoline Co.
Deep Rock Oil Corp.
Derby Oil Co.
Eason Oil Co.
El Dorado Refining Co.
Elk Refining Co.
Empire Oil & Refining Co.
Fleet-Wing Corp.
Freedom Oil Works Co.
General Petroleum Corp. of California
Gilmore Oil Co.
Globe Oil & Refining Co.
Gulf Oil Corp.
Hancock Oil Co. of California
Hickok Oil Corp.
Home Oil & Refining Co.
Humble Oil & Refining Co.
Independent Refining Co.
Indian Refining Co.
Johnson Oil Refining Co.
Kanotex Refining Co.
Kendall Refining Co.
Latonia Refining Corp.
Lion Oil Refining Co.
Louisiana Oil Refining Corp.
MacMillan Petroleum Corp.
Magnolia Petroleum Co.
Mid-Continent Petroleum Corp.
National Refining Co.
Ohio Oil Co.
Oil Creek Refining Co.
Omar Refining Co.
Pan American Petroleum Corp.
Panhandle Refining Co.
Pennsylvania Oil Products Refining Co.
Pennsylvania Refining Co.
Pennzoil Co.
Petrol Corporation
Phillips Petroleum Co.
Pure Oil Co.
Quaker State Oil Refining Corp.
Refiners, Inc.
Republic Oil Refining Co.
Richfield Oil Co. of California
Richfield Oil Corp. of New York
Rio Grande Oil Co.
Rock Island Refining Co.
Rodessa Oil & Refining Corp.
Root Petroleum Co.
St. Helen's Petroleum Co., Ltd.
Seaside Oil Co.
Shell Eastern Petroleum Products, Inc.
Shell Oil Co.
Shell Petroleum Corp.
Signal Oil Co.
Sinclair Refining Co.
Skelly Oil Co.
Socony-Vacuum Oil Co. Inc.
Lubrite Division
White Eagle Division
White Star Division
Standard Oil Co. of California
Standard Oil Co. (Indiana)
Standard Oil Co. (Kentucky)
Standard Oil Co. of Louisiana
Standard Oil Co. (Nebraska)
Standard Oil Co. of New Jersey
Standard Oil Co. (Ohio)
Standard Oil Co. of Pennsylvania
Standard Oil Co. of Texas
Standard Oil of New York
Sterling Oil Co.
Stoll Oil Refining Co.
Sunset Oil Co.
Texas Company
Texas Pacific Coal & Oil Co.
Tide Water Oil Co.
Tide Water Oil Co. (Oklahoma)
Tri-State Refining Co.
Union Oil Co. of California
United Refining Co.
Utah Oil Refining Co.
Valvoline Oil Co.
Vickers Petroleum Co.
Viking Distributing Co.
Wadhams Oil Co.
Waggoner Refining Co., Inc.
Warner-Quinlan Co.
H. F. Wilcox Oil & Gas Co.
Wirt Franklin Petroleum Corp.
Wolverine-Empire Refining Co., Inc.
Yale Oil Corp.



VIEW of the world from an auto headlamp. Here is the financial district of New York City as it appears in the headlamp of an automobile. The picture was made by the cameraman pointing his lens into one of the lights of a modern car.

A New Rainy Day Profit Item Announced

The Champion Anti-Rattler Co., Inc., announces a new drip molding or rain gutter for all popular makes of cars. This new Champ-Item, No. 905,



brings old models up-to-date with a close fitting rubber drip molding that blends gracefully with contour of door and stops roof drainage from dripping into the car. Can be installed quickly without the use of tools and can be sprayed or painted to match the car. List $1 per pair. Write for literature to the Champion Anti-Rattler Co., Inc., 1958 Washington Avenue, St. Louis, Mo.

Pontiac Airs Women's Views

Kathryn Cravens began a series of 15-minute news broadcasts for Pontiac, known as "News Through a Woman's Eyes," last month. Over a coast-to-coast Columbia network of 57 stations, the feature will be heard from 2 to 2:15 p.m. each Monday, Wednesday and Friday.

Sweet or Sour?

Out in Chico, Cal., there is an independent repair shop operating under the name of Sweet Brothers, with Chris Sauer acting as proprietor.

Safe Driving Contest To Be Held at Texas Centennial

One of the features to climax the Texas Centennial Central Exposition at Dallas will be the Texas Auto Driving Classic, a safe driving contest, including ten tests or events. The Classic is to be held at the Centennial Cotton Bowl, Nov. 28-29. It is open to male and female drivers who are residents of Texas and special prizes will be awarded for each event. Col. Art B. Hickox, director and referee of the Driving Classic is expecting spectators from all over the nation.

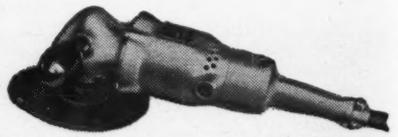
"Roadable" Autogiro Delivered

An experimental type autogiro, capable of highway as well as air travel, was delivered to the Department of Commerce Building on October 2nd by James G. Ray, vice-president of the Autogiro Company of America, Phila., Pa., builders of the giro.

Mr. Ray landed in Washington, D. C., folded the rotors, engaged the power-driven tail wheel and drove to the Department of Commerce door where it was delivered to Secretary Roper.

Black & Decker Offers New No. 17 Junior Sander

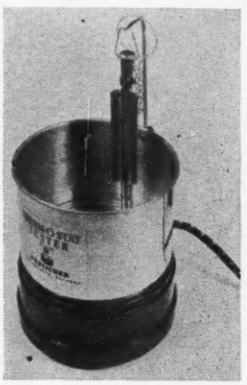
For light duty sanding and metal finishing on all types of metal surfaces, smoothing welds and casting ridges and any other work that does



not require the speed, power and weight of a heavy duty sander, the Black & Decker Mfg. Co., Towson, Md., has announced a new light weight No. 17 Junior Sander to sell for $39.50. A thumb-operated tumbler switch improves control and handling. Flexible pad adapts the sander to flat or curved surfaces. Universal motor operates on either alternating or direct current.

Tester Determines Thermostat Operation

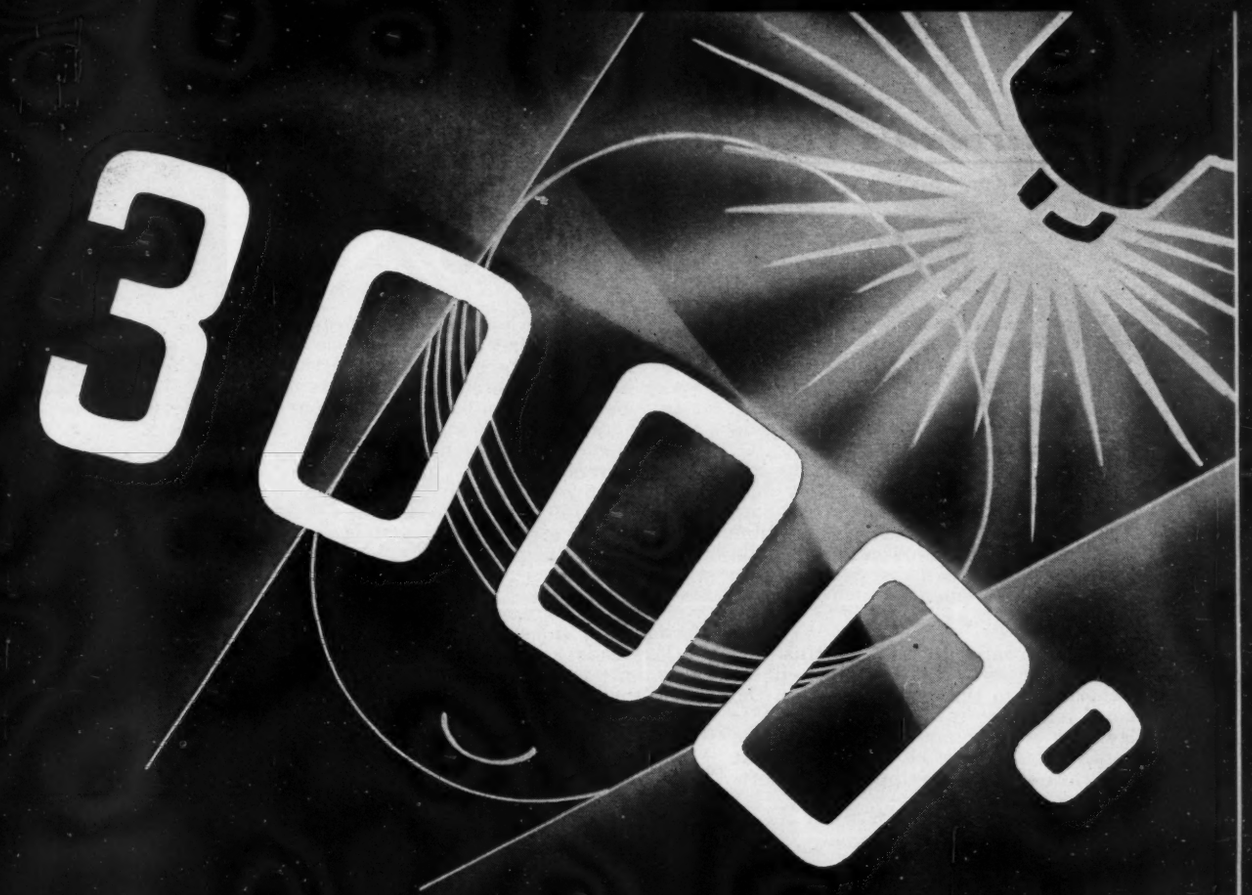
An electrically operated thermostat tester has been announced by Publicker, Inc., Philadelphia, Pa. It consists of a small tank and an elec-



tric heat unit. The thermostat is placed in the tank of water and the tester is plugged in to the lighting circuit. With a thermometer placed in the water, the "break opening" and "full opening" points of the thermostat can be accurately determined.



HOLD IT—Here comes a NEW car



OF SEARING, BURNING, WEAR-PRODUCING HEAT

Heat, caused by the raging inferno of ignited gasses under the high temperatures and pressures existing in the combustion zone, takes a terrific toll of oil and metal.

Graphite, a solid lubricant, created in the electric furnace at a temperature of 5000° F., withstands high temperatures without difficulty.

Thus, in the 1000° F. temperature existing on the upper cylinder walls and pistons, oil, making a valiant effort to surmount this holocaust of fire, can be materially aided by "dag" colloidal graphite.

This material serves, through the medium of the graphoid surface, as a perfect background for oil. It easily withstands the temperatures around the friction parts. This microscopically thin surface of graphite is there during the momentary breaks in the oil film, co-operating in the battle against wear. And due to its great attraction for oil, hastens quick return to full film lubrication.

The value of the graphoid surface is forcefully demonstrated when starting engines from cold--also, a period when, automotive authorities state, substantial wear occurs. The protective graphite film cuts this to a minimum and safeguards the parts until the oil is circulating freely. Send for booklet discussing the use of "dag" colloidal graphite in this application and also crankcase and spring lubrication.

Ask your oil supplier about his colloidal-graphited brands today

ACHESON COLLOIDS CORPORATION ✦ ✦ PORT HURON, MICHIGAN

COPYRIGHT 1936, ACHESON COLLOIDS CORP.

REG. U. S. **dag** PAT. OFF.

COLLOIDAL PRODUCTS

COLLOIDAL GRAPHITE

"DAG" COLLOIDAL GRAPHITE IS A 100% AMERICAN MADE MATERIAL

Repairman's Visit To The

FACTORIES

Word comes from the car manufacturing centers that the automotive retailing field is approaching the new sales year in the best inventory position it has enjoyed in many years. . . . An unusually thorough clean-up of old models has been achieved. . . . Used car stocks are reasonably low and most dealers will be fairly well supplied with 1937 models when cars are introduced. . . . By show time the majority of manufacturers should be in position to make deliveries in substantial volume.

* * *

Ten thousand British Austins, the "baby" car of Great Britain, will be imported into this country within the next year, according to reports. Sir Herbert Austin, manufacturer of the cars, told *Automotive Industries* that the cars will be equipped with left-hand steering . . . that the two-passenger sport model, with a special, stepped-up engine, will prove to be the most popular type . . . and that the price will be approximately the same as in England, ranging from about $500 to $700.

* * *



Karl W. Nelson, sales manager of automotive products, of the General Electric Co., has returned from a trip to the West where he presented the 1936-1937 line of G-E Tungar Battery Chargers and Testers and also introduced the new Tungar D-C Arc Welder.

* * *

Merger negotiations between the Nash Motor Co. and the Kelvinator Corp. are under way in Detroit. This combination would create another major motor-refrigeration-air conditioning unit. General Motors and Chrysler Corp. are already in the field.

The Weatherhead Co. of Cleveland recently announced the purchase of the former Hupmobile plant in that city. . . . The factory site consists of two monitor type buildings, a four-story factory and a five-story office building. . . . These new quarters of approximately half million square feet of floor space give the company more than double the area it has been occupying in six different buildings during the last few years.

* * *

W. R. Tracy, vice-president in charge of sales of Hudson Motor Car Co., made known five executive promotions last month.

George H. Pratt, assistant general sales manager, was named sales manager; H. F. Byrne, assistant sales manager, was named eastern sales manager; H. P. Grove, formerly Pacific Coast regional manager, has been appointed western sales manager; C. G. Beeching has been appointed sales manager in charge of zones, and T. H. Stambaugh becomes director of national service operations, which includes parts and service activities and accessory merchandising.

At the same time, Mr. Tracy announced that Hudson has opened regional offices in six key cities of the country, and that the company's field organization has been increased to better serve Hudson's expanded dealer organization from coast to coast.

* * *

Alfred P. Sloan, Jr., president of General Motors Corp., has announced the following organization changes, effective Nov. 1: C. H. Kindl, now factory manager of the Delco Products Division at Dayton, Ohio, becomes general manager, succeeding Frank H. Prescott, transferred to other duties. R. H. Ahlers remains as general manager of the Delco Brake Division at Dayton, Ohio, which will operate independently of the Delco Products Division with which it has been affiliated. The Delco Products Division manufactures shock absorbers and other parts for automobiles and electric motors for industrial use and the Delco Brake Division manufactures automobile brake assemblies for General Motors cars.

* * *

The Long Manufacturing division of Borg-Warner Corp., has consolidated all of its automotive clutch and radiator manufacturing activities in its plant at Dequindre & Halleck Sts., Detroit. This concentration of operations gives a total of 236,000 sq. ft. . . . The rearrangement of facilities provides for production of 3600 radiators and 12,000 clutches per 24-hour day.

* * *

J. A. Tumbler, president of J. A. Tumbler Laboratories, Baltimore, sailed last month, to complete arrangements for establishment of a factory in England from which his company's European business will be handled.

* * *

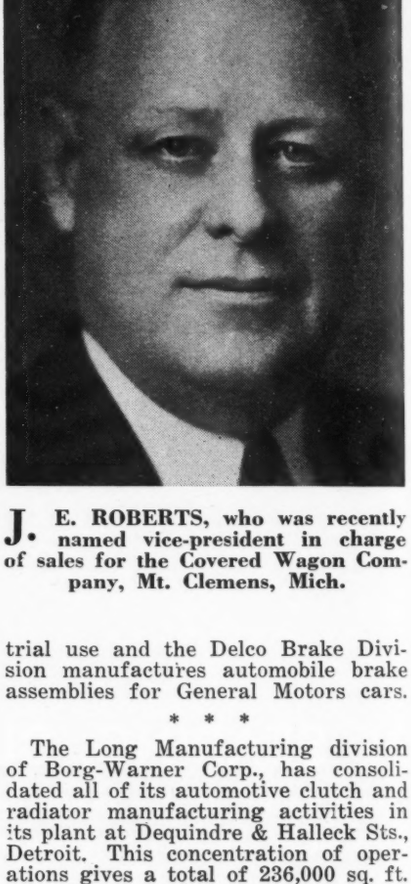
The Fitzgerald Manufacturing Co., Torrington, Conn., has inaugurated a national advertising campaign to help garagemen sell more gaskets and grease retainers.

* * *

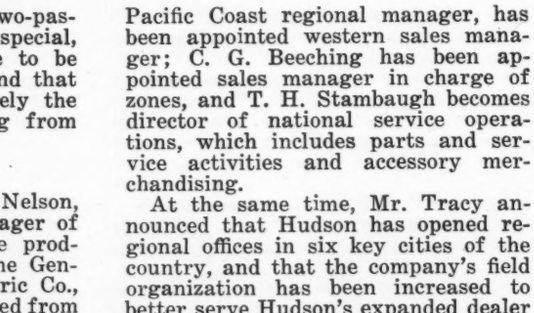
The Independent Pneumatic Tool Co. has made known its new time-payment plan for the sale of its portable electric tools. Word from the factory says that "the plan as introduced carries along with it practically a negligible carrying charge, and offers terms of payment so reasonable as to materially affect purchasers along these lines for several months to come." It was introduced to cover the company's line of Thor Electric Tools.

* * *

American Brakeblok brake lining is being manufactured at the factory of Societe Anonyme Fadil at Gif, France. This arrangement was established by the American Brakeblok Corp. to make its linings on a royalty basis for distribution in France and the French Colonies.



J. E. ROBERTS, who was recently named vice-president in charge of sales for the Covered Wagon Company, Mt. Clemens, Mich.



(Right) New plant recently purchased by Weatherhead Co. formerly owned by Hupmobile

(Left) Long Mfg. division of Borg-Warner has consolidated its manufacturing activities

Why Jobbers?

(*Continued from page 52*)

perfected by parts manufacturers who frequently have had to prove them in the replacement field before they were accepted by the car factories. Through the jobber these parts were made available to the maintenance trade and after they had established their advantages they were accepted by the car factories as standard equipment. Any number of examples might be given but expander-type piston rings will suffice. A few years back they were scoffed at as "trick" rings. Jobbers sold 'em, independent repairmen installed 'em —and today they're standard equipment on a number of cars.

It must not be forgotten, either, that many parts which are not sold as original equipment, are engineered particularly for replacement purposes. In other words, some parts manufacturers specialize in the development of parts which are designed particularly to give better performance than the original parts or which allow for wear and deterioration in the units they are designed to replace. Such products also come to the repair trade through jobbers—frequently *only* through jobbers, and because they're engineered for replacement they're often superior to anything obtainable anywhere else.

So much for *quality*. Now, let's look at *price*.

Obviously, if the parts manufacturer is to get his share of the replacement business his prices have to be in line with those of the car manufacturer and of competing parts manufacturers. Particularly must he keep selling costs down—and that's where the jobber comes in. It has been proven time and again that automotive products can be placed in the hands of a large number of comparatively small buyers at less cost, and hence at lower prices, through jobbers than through any other method of distribution. So the parts manufacturers sell through jobbers because it helps them to keep their prices down; and because jobbers compete not only with other jobbers but with other sources of supply and methods of distribution, prices to the maintenance trade will continue to be competitive.

1937 Indianapolis Entry Blanks Being Distributed

The annual scramble for the honor as "first entrant" for the historic 500-mile International Sweepstakes at Indianapolis has begun. Entry blanks for the Twenty-fifth annual classic, May 30, 1937, have been mailed to the topnotch drivers of the United States and Europe, and soon the signed entries will begin arriving at Speedway Headquarters in Indianapolis.

The Briggs Clarifier Co., Washington, D. C., makers of Briggs Oil Clarifiers, has recently published an Oil Filtration Manual in which is described the various kinds of oil filters and their operation, and an explanation of the various tests of lubricating oils. The construction and operation of the Briggs Clarifier is described in detail, and a large number of illustrations are used throughout the Manual.



CHICAGO

Lines Up With the NATIONAL SAFETY MOVEMENT

The SAFETY movement is daily gaining in momentum.

The appalling toll in death and accidents caused by operation of cars with faulty mechanism is making cities and individuals "ACCIDENT PREVENTION" conscious. An increasing number of cities are making safety-lane check-up a compulsory requirement.

BEE-LINE is the equipment available to you that is definitely designed to make an accurate check and correction of improper alignment.

Our Master BEE-LINE aligner in your garage will enable you to make proper adjustments recommended by Safety-Lane tests on light trucks and all passenger cars.

The Super BEE-LINE equipment is complete in every detail. This equipment enables you to handle every kind of motor vehicle, including busses, trucks and trailers.

A BEE-LINE representative in your territory will give you complete details and explain our convenient deferred payment plan.

BEE-LINE is without reservation the FASTEST, MOST ACCURATE, and COMPLETE wheel aligning, frame and axle straightening equipment.

Write today for particulars.

BEE-LINE MFG. COMPANY

DAVENPORT, IOWA

Mechanical Specifications

These Specifications Are Brought Up-to-Date Each Month by the

Line Number	MAKE AND MODEL	Lowest Priced 4-door Sedan	Wheelbase (Ins.)	Tire Size (Ins.)	ENGINE															CHASSIS						
					No. of Cylinders, Bore and Stroke	Taxable H.P.	Piston Displacement (Cu. Ins.)	Maximum Brake H.P. at Specified R.P.M.	Compression Ratio (to—1.)	Displacement Factor††	Cylinder Head Material	Camshaft Drive Make	Piston Material	Oil Cleaner Make	Air Cleaner Make	Carburetor Make	Muffler Make	Electrical System Make	Battery Make	Clutch Type and Make	Gearset Make	Universals Type and Make	Rear Axle Type and Make	Rear Axle Ratio	Front Spring Suspension
1	American-Bantam	$365f		4.75/16	4-2.2x3	7.8		20-4000					CS					A		P					C
2	Auburn 654	795	120	6.00/16	6-3 1/16x4 3/4	22.5	209.9	85-3500	6.20	37.4	Al	Whit	Al	Pur	AC	Str	Buf	A	USL	P.Long	WG	Nb-Mec	½ Col	4.44	C
3	Auburn 852	1095	127	6.50/16	8-3 1/16x4 3/4	30.0	279.9	115-3600	6.50	41.4	Al	Whit	Al	Pur	AC	Str	Buf	A	USL	P.Long	Det	Nb-Mec	½ Col	4.08	C
4	Auburn SC852	1545	127	7.00/16	8-3 1/16x4 3/4	30.0	279.9	150-4000	6.50		Al	Whit	Al	Pur	AC	Str	Buf	A	USL	P.Long	Det	Nb-Mec	½ Col	4.08	C
5	Buick 37-40	845	126	6.50/16	8-3 3/32x4 1/8	30.6	248.0	100-3200	5.70	39.6	CI	LB	Ala		AC	Str	Wal	D	Del	P.Own	Own	m-Spi	½ Own	4.40	IC
6	Buick 37-60	1035	122	7.00/15	8-3 1/16x4 1/16	37.8	320.2	130-3400	5.75		CI	LB	Ala		AC	Str	Wal	D	Del	P.Own	Own	m-Spi	½ Own	3.90	IC
7	Buick 37-80	1275	131	7.00/16	8-3 1/16x4 1/16	37.8	320.2	130-3400	5.75	40.7	CI	LB	Ala		AC	Str	Wal	D	Del	P.Own	Own	m-Spi	½ Own	4.22	IC
8	Buick 37-90	1725	138	7.50/16	8-3 1/16x4 1/16	37.8	320.2	130-3400	5.75		CI	LB	Ala		AC	Str	Wal	D	Del	P.Own	Own	m-Spi	¾ Own	4.62	IC
9	Cadillac V8-60 & 65		121, 131	7.00/16	8-3 1/2x4 1/2	39.2	346.0	135-3400	6.25		CI	Mor	Ala	Han	AC	Str	Old	D	Del	P.Long	Own	Nb-Mec	½ Own	(w)	IC
10	Cadillac V8-70 & 75		131-38	7.50/16	8-3 1/2x4 1/2	39.2	346.0	135-3400	6.25		CI	Mor	Ala	Han	AC	Str	Old	D	Del	P.Long	Own	Nb-Mec	½ Own	(v)	IC
11	Cadillac V12-85		138	7.50/16	12-3 1/16x4	46.9	368.0	150-3600	6.00		CI	Mor	Ala	Han	AC	DL	Own	D	Del	P.Long	Own	Nb-Mec	½ Own	4.60	IC
12	Cadillac V16-90		154	7.50/17	16-3x4	57.5	452.0	185-3800	6.00		CI	Mor	Ala	Han	AC	DL	Own	D	D	dp.Own	Own	Nb-Mec	¾ Own	4.64	IC
13	Chevrolet Master		112¼	6.00/16	6-3 1/2x3 3/4	29.5	216.5	85-3200	6.25		CI	Own	CI	No	AC	Car	Own	D	D	P.Own	Own	m-Own	½ Own	3.73	Con
14	Chevrolet Mas.DeL		112¼	6.00/16	6-3 1/2x3 3/4	29.5	216.5	85-3200	6.25		CI	Own	CI	No	AC	Car	Own	D	D	P.Own	Own	m-Own	½ Own	4.22	IKa
15	Chrysler Roy. C-16	815		6.00/16	6-3 5/16x4 1/4	27.3	228.1	93-3600	6.50		CI°	Mor	Ala	Pur		Car		A	Wil	P	Own		½ Own	4.10	IC
16	Chrysler Imp. C-14	995		6.50/16	8-3 1/4x4 1/4	33.8	273.8	110-3600	6.70		Al	Mor	Ala	Pur		Str		A	Wil	P.Long	Own		½ Own	4.10	IC
17	Chrysler.Cus.Im.C-15			7.50/16	8-3 1/4x4 7/8	33.8	323.5	130-3400	6.50		Al	Mor	Ala			Str		A	Wil	P.Long	Ot		½ Own	4.55	IC
18	Chrysler.Airflow C-17	1475		7.50/16	8-3 1/4x4 7/8	33.8	323.5	130-3400	6.50		Al	Mor	Ala			Str		A	Wil	P	Ot		½ Own	4.30	C
19	Cord 812	1995	125	6.50/16	8-3 1/2x3 3/4	39.2	288.6	115-3600	6.30		Al	Whit	Al	No	AC	Str	NS	A	USL	P.Long	Own	Rzeppa	Tu Own	4.70	IT
20	De Soto Airstream 6	785		6.00/16	6-3 5/16x4 1/4	27.3	223.1	93-3600	6.50		CI°	Mor	Ala	Pur		Car		A	Wil	P		Nb-	½ Own	4.10	IC
21	Dodge Six	745	115	6.00/16	6-3 1/4x4 3/8	25.3	217.8	87-3600	6.50		CI	Mor	Als	Pur	AC	Str		A	Wil	P			½ Own	4.10	C
22	Duesenberg J		142-153½	7.00/19°	8-3 3/4x4 3/4	45.0	419.7	320-4200	5.20		CI	LB	Al	Pur	Yes	Str		D	Exi	dpLong	Own	m-Spi	½ Own		
23	Ford V8				8-2.6x3.2	21.6	136.0	60-3500	6.75															4.44	
24	Ford V8		112	6.00/16	8-3 1/16x3 3/4	30.0	221.0	85-3500	6.12		Al	Gear	Al	No	Yes	Str	Own	O	Own	P.Os	Own	m-Own	¾ Own	3.78	
25	Graham 85	665	111	5.25/17	6-3x4	21.6	169.6	70-3500	6.80		Al	LB	Als	No	Bur	Mar	Old	D	Wil	P.Ill	WG	Nb-UP	½ Spi	4.55	C
26	Graham 95	775	116	6.00/16	6-3 1/4x4	25.3		85-3300	6.70		Al	LB	Als	No	Bur	Mar	Old	D	Wil	P.Long	WG	Nb-UP	½ Spi	4.45	C
27	Graham S.C. 116	895	116	6.00/16	6-3 1/4x4	25.3	199.1	106-4000	6.70		Al	LB	Als	Fram	Bur	Mar	Old	D	Wil	P.Long	WG	Nb-UP	½ Spi	4.27	C
28	Graham S.C. 120	995	120	6.25/16	6-3 1/4x4 3/8	25.3	217.8	116-4000	6.70		Al	LB	Als	Fram	Bur	Mar	Old	D	Wil	P.Long	WG	Nb-UP	½ Spi	4.27	C
29	Hudson 6-73	790	122	6.00/16	6-3x5	21.6	212.0	101-4000	6.25		CI°	Ge°	Al	No	AC	Car	Old	A	Nat	P.Own†	Own	Nb-Spi	½ Own	4.11	C
30	Hudson 8, 74-5-6-7	840	122, 129	6.25/16	8-3x4 1/2	28.8	254.0	122-4200	6.25		CI°	Ge°	Al	No	AC	Car	Old	A	Nat	P.Own†	Own	Nb-Spi	½ Own	4.11	C
31	La Salle 37-50		124	7.00/16	8-3 5/16x4 1/2	36.4	322.0	125-3400	6.25		CI	Mor	Al	Han	AC	Str	Old	D	Del	P.Long	Own	Nb-Mec	½ Own	3.92	IC
32	Lincoln Zephyr	1190	122	7.00/16	12-2 3/4x3 3/4	36.3	267.3	110-3900	6.7		Al	Gear	St		Yes		Own	O	Own	P.Os	Own	m-Own	¾ Own	4.44	Tr
33	Lincoln V12		136-145	7.50/17	12-3 1/16x4 1/2	46.8	414.0	150-3400	6.38	41.5	Ala	Ch	Ala	Pur	Yes	Str	Own	A	Exi	P.Long	Own		FF Tim		
34	Nash Amb. 6, 3720		121	6.25/16	6-3 5/16x4 3/8	27.3	234.8	93-3400	5.67		CI		Als	BS	AC	Str		A	USL	P.B&B	Own	Nb-	½ Own	4.11	C
35	Nash Amb. 8, 3780	995	125	7.00/16	8-3 1/16x4 1/4	31.2	260.8	105-3400	5.64		CI	Ch	Als	BS	AC	Str		A	USL	P.B&B	Own	Nb-	½ Own	4.10	C
36	Nash Lafay. 400-3710		117	6.00/16	6-3 5/16x4 3/8	27.3	234.8	90-3400	5.61		CI		Als		AC	Str		A	USL	P.B&B	Own	Nb-	½ Own	4.11	C
37	Oldsmobile F37		117	6.50/16	6-3 7/16x4 1/4	28.4	229.7	95-3400	6.10		CI	Whit	Ala	No	AC	Car	Var	D	D	P.B&B	Own	Nb-Mec	½ Own	4.37	IC
38	Oldsmobile L37		124	7.00/16	8-3 1/4x3 7/8	33.8	257.1	110-3600	6.20		CI	LB	Ala	No	AC	Car	Var	D	D	P.B&B	Own	Nb-Mec	½ Own	4.37	IC
39	Packard 115C	895	115	6.50/16	6-3 7/16x4 1/4	28.3	237.0	100-3600	6.30		CI	Mor	Als	No	AC	CG		D	Wil	P		Nb-Mec	½ Own	4.36	IC
40	Packard 120C	1045	120	7.00/16	8-3 1/4x4 1/4	33.8	282.0	120-3800	6.50	41.8	Al	Mor	Als	No	AC	Str	Old	A	PD	P	Own	Nb-Mec	½ Own	4.09	IC
41	Packard 1500, 1, 2	2530	127-34-39	7.50/16	8-3 5/16x5	32.5	320.0	135-3200	6.80		Al	Mor	Als	Pur	AC	Str			PD	P	Own	Nb-UP	½ Own	4.69	IC
42	Packard 1506, 7, 8	3560	132-39-44	8.25/16	12-3 7/16x4 1/4	56.7	473.0	175-3200	6.40		Al	Mor	Als	Pur	AC	Str		D	PD	P	Own	Nb-Spi	½ Own	4.41	IC
43	Pierce-Arrow 1701	3195	138-144	7.00/17	8-3 1/2x5	39.2	385.0	150-3400	6.40		Al	Whit	Als	Pur	AC	Str	Buf	D‡	Wil	P.Long	WG	Nb-UP	½ Own	4.58	C
44	Pierce-Arrow 1702	3695	138-144	7.50/17	12-3 1/2x4	58.8	462.0	185-3400	6.40		Al	Whit	Als	Pur	AC	Str	Buf	D‡	Wil	P.Long	WG	Nb-UP	½ Own	4.58	C
45	Pierce-Arrow 1703	4795	147	7.50/17	12-3 1/2x4	58.8	462.0	185-3400	6.40		Al	Whit	Als	Pur	AC	Str	Buf	D‡	Wil	P.Long	WG	Nb-UP	½ Own	4.58	C
46	Plymouth P3	595	112	5.50/16	6-3 1/16x4 3/8	23.4	201.3	82-3600	6.70		CI	Mor	Ala			Car		A	Wil	P	Own	Nb-	½ Own	3.90	C
47	Plymouth P4	670	112	6.00/16	6-3 1/16x4 3/8	23.4	201.3	82-3600	6.70		CI	Mor	Ala	Pur		Car		A	Wil	P	Own	Nb-	½ Own	4.10	C
48	PontiacDeL.6,37-26CA		117	6.00/16	6-3 7/16x4	28.3	222.7	85-3520	6.20		CI	Mor	CHI	No	AC	Car	BO	D	Del	P.Own	Own	Nb-Mec	½ Own	4.37	IC
49	Pontiac DeL.8,37-28A		122	6.50/16	8-3 1/4x3 3/4	33.8	248.9	99-2800	6.20		CI	Mor	CHI	No	AC	Car	BO	D	Del	P.Own	Own	Nb-Mec	½ Own	4.37	IC
50	Studebaker Dict. 6	745	116	6.00/16	6-3 1/4x4 3/8	25.4	217.8	90-3400	6.00		CI	Dia	Ly	Fram	AC	Str	Buf	A	Wil	P.B&B	WG	Ru-Th	½ Spi	4.55	C
51	Studebaker Dict. Pl.		116	6.00/16	6-3 1/4x4 3/8	25.4	217.8	90-3400	6.00		CI	Dia	Ly	Fram	AC	Str	Buf	A	Wil	P.B&B	WG	Ru-Th	½ Spi	4.55	IT
52	Studebaker Pres.	1015	125	6.50/16	8-3 1/16x4 1/4	30.0	250.4	115-3600	6.50		Al	Dia	Ly	Fram	Bur	Str	Bur	D	Wil	P.Long	WG	Nb-Spi	½ Spi	4.55	IT
53	Terrap DeL.&Cus.6	675	117	6.00/16	6-3x5	21.6	212.0	96-3900	6.25		CI°	Ge	Al	No	AC	Car	Old	A	Nat	P.Own†	Own	Nb-Spi	½ Own	4.11	C
54	Willys 37		100	5.50/16	4-3 1/16x4 3/8	15.6	134.2	48-3200	5.70		CI	LB	CI	No	AC	Til	Buf	A	USL	P.B&B	WG	m-UP	½ Own	4.30	C

ABBREVIATIONS

°—Others Used
†—Power Clutch ½—Semi-Floating
¾—Three Quarters Floating
Al—Aluminum **Ala**—Anode-processed
Als—Aluminum Alloy with Strut
BS—Briggs & Stratton
Ch—Chain
CHI—Chrome Nickel Iron
CI—Cast Iron
CS—Cast Steel
C—Conventional **dp**—Double Plate
f—Standard Coupe
FF—Full Floating
IC—Independent Coil
IKa—**Independent Knee action**
IT—Independent-Transverse
m—Metal **Ly**—Lynite
N—No or None
Nb—Needle Bearing
Os—Own Semi-centrifugal
Ot—Overdrive Transmission
P—(Clutch) Single Plate
Tu—Tubular **Tr**—Transverse
Var—Various
(t)—60-7.00/16, 65-7.50/16
(u)—60-3.69, 65-4.30
(v)—70-4.30, 75-4.60
(x)—At 1000RPM

ABBREVIATIONS (Make of Units)

‡—Owen-Dyneto for Generator and Starter
††—Computed on a basis of displacement, gear ratio, effective tire diameter and weight with normal load

A—Autolite
AC—AC Spark Plug
B&B—Borg and Beck
BH—Bendix Hydraulic Operated
BM—Bendix Mechanical (Brakes)
BP—Bendix Power Operated (Brakes)
Buf—Buffalo Pressed Steel
BO—Buffalo or Oldberg
Bur—Burgess **Car**—Carter
Ch—Champion **Col**—Columbia
CG—Chandler-Groves
D—Delco-Remy
Del—Delco
Det—Detroit
Dia—Diamond
DL—Detroit Lubricator Co.
Exi—Exide **Fle**—Fleming
G—Gemmer (Steering)
Han—Handy
HM—Hydraulic Mechanical
Ill—Illinois
LB—Link Belt
LH—Lockheed Hydraulic (Brakes)
M—Midland Steeldraulic

Tune-Up Specifications

Car Manufacturers and Supersede All Others Previously Published

Service Brake Make and Type	Steering Gear Make	Compression Pressure at Cranking Speed (Lbs.)	Spark Plug Make and Type	RINGS No. and Width Comp.	RINGS No. and Width Oil	Piston Pin Diameter	Piston Pin Locked in	VALVES Head Diameter and Seat Angle Inlet (Ins.)	Inlet Seat Angle (Degrees)	Exhaust (Ins.)	Exhaust Seat Angle (Degrees)	Stem Diameter (Ins.)	Operating Tappet Clearance Inlet	Operating Tappet Clearance Exhaust	Inlet Tappet Clearance for Valve Timing	Intake Valve Opens Before or After T.C. No. of Degrees	No. of Flywheel Teeth	IGNITION Breaker Points Gap (Ins.)	Spark Plug Gap (Ins.)	Timing Spark Occurs °TC	Timing No. of Flyw. Teeth Spark Occurs TC	Breaker Housing	Rods Removed From	Crankpin Diameter (Ins.)	Crankpin Length (Ins.)	Capacity Crankcase (Qts.)	Capacity Cooling System (Qts.)	FRONT AXLE Caster (Degrees)	Camber (Degrees)	Toe-In (Inches)	King Pin Inclination (Degrees)	Line Number
....	....	....	.....	3	1	....	F..	....	....	....	....	....	.....	.....	....	.....	.....	.....	.....	.....	.....	..	..	1½	1¼	..	6	.....	.....	.....	.....	1
BH	R...	....	Ch-J-6....	2-⅛	1-⅛ 1-3/16	⅞	R.	1 1/16	30	1 13/32	45	.342	.010H	.010H	.012	7½B...	2¼B.	.018	.025	3B...	1B...	Au.	B.	2⅛	1¼	6	16	3½-4	1.5	⅛	7½	2
BH	R...	....	Ch-J-6....	2-⅛	1-⅛ 1-3/16	⅞	R.	1 1/16	30	1 13/32	45	.342	.010H	.010H	.012	7½B...	2¼B.	.018	.025	3B...	1B...	Au.	B.	2⅛	1¼	8	20	2-3	1.5	⅛	7½	3
BH	R...	....	Ch-J-9....	2-⅛	1-⅛ 1-3/16	⅞	R.	1 1/16	30	1 13/32	45	.342	.010H	.010H	.012	7½B...	2¼B.	.013	.025	3B...	1B...	Au.	B.	2⅛	1¼	8	20	2-3	1.5	⅛	7½	4
OH	S...	....	AC-H9....	2-3/16	2-3/32	13/16	R.	1 17/32	45	1 11/32	45	....	.015	.015	.019	13B...	3¼B.	....	.025	2B...	¾B.	....	A.	2	1 7/32	7	13¼	¼-±⅜	-¼, +1	0-1/16	....	5
OH	S...	....	AC-H9....	2-3/16	2-3/32	⅞	R.	1 17/32	45	1 1/16	45	....	.015	.015	.019	14B...	3¼B.	....	.025	10B...	4½B.	....	A.	2¼	1 1/16	9	17	¼-±⅜	-¼, +1	0-1/16	....	6
OH	S...	....	AC-H9....	2-3/16	2-3/32	⅞	R.	1 17/32	45	1 1/16	45	....	.015	.015	.019	14B...	3¼B.	....	.025	10B...	4½B.	....	A.	2¼	1 1/16	9	17	0-±⅛	-¼, +1	0-1/16	....	7
OH	S...	....	AC-H9....	2-3/16	2-3/32	⅞	R.	1 17/32	45	1 1/16	45	....	.015	.015	.019	14B...	3¼B.	....	.025	10B...	4½B.	....	A.	2¼	1 1/16	9	17	0-±⅛	-¼, +1	0-1/16	....	8
BH	S...	....	AC-K7....	2-⅛	2-3/32	⅞	F..	1.87	45	1.62	45	.341	AA...	AA...	0	TC...	TC...	.015	.026	5B...	2¼B.	Ad.	A.	2.46	2 1/32	7	25	(c).....	(d) ...	0-1/16	(e)..	9
BH	S...	....	AC-K7....	2-⅛	2-3/32	⅞	F..	1.87	45	1.62	45	.341	AA...	AA...	0	TC...	TC...	.015	.026	5B...	2¼B.	Ad.	A.	2.46	2 1/32	7	25	0-±¼	0-½	0-1/16	5°38′	10
BH	S...	....	AC-G7....	3-3/32	1-3/32	⅞	P..	1.51	45	1.39	45	.339	AA...	AA...	0	TC...	TC...	.021	.026	10B...	3B...	Ad.	B.	2½	2¼	9	21	0-±¼	0-½	0-1/16	5°38′	11
OP	S...	....	AC-G6....	3-3/32	1-3/32	⅞	P..	1.51	45	1.39	45	.339	AA...	AA...	0	TC...	TC...	.016	.026	4B...	1¼B.	Ad.	B.	2½	2¼	10	24	0-±¼	0-½	0-1/16	4½	12
OH	O...	112	AC-K11...	2-⅛	1-3/16	.865	R.	1 41/64	30	1 15/32	30	11/32	.006H	.013H	.006	9B....	3¼B.	.020	.040	5B...	1¾B.	Ad.	A.	2 5/16	1½	5	14½	3½	1±½	5/64-⅛	7⅛	13
OH	O...	112	AC-K11...	2-⅛	1-3/16	.865	R.	1 41/64	30	1 15/32	30	11/32	.006H	.013H	.006	9B....	3¼B.	.020	.040	5B...	1¾B.	Ad.	A.	2 5/16	1½	5	15	0	¼-¾	1/16-⅛	7¾	14
LH	G...	155x	.....	2-⅛	2-3/32	55/64	F..	1 31/64	45	1 17/32	45	.340	.006H	.010H	.014	TC...	TC...	.020	.025	.....	.....	Au.	A.	2⅛	1¼	5	20	1½	†	0-1/16	4¾-6	15
LH	G...	....	.....	2-⅛	2-3/32	55/64	F..	1 31/64	45	1 17/32	45	.340	.006H	.010H	.011	2B....	¾B.	.018	.025	.....	.....	Au.	A.	2 3/16	1⅛	6	22	1½	†	0-⅛	4¾-6	16
LH	G...	150x	.....	2-⅛	2-3/32	55/64	F..	1 31/64	45	1 17/32	45	.340	.006H	.010H	.011	2B....	¾B.	.018	.025	.....	.....	Au.	A.	2 3/16	1⅛	6	21	.....	.....	.....	.....	17
LH	G...	150x	.....	2-⅛	2-3/32	55/64	F..	1 31/64	45	1 17/32	45	.340	.006H	.010H	.011	2B....	¾B.	.018	.025	.....	.....	Au.	A.	2 3/16	1⅛	6	17	2	¼-¾	0-⅛	5	18
LH	G...	110	Ch-J-9-B..	2-3/32	2-3/32	⅞	F..	1 13/16	30	1 23/64	45	.342	.009	.009	.016	7½B....	.....	.015	.025	3B...	1¼..	Au.	A.	2	2⅜	7	28	1-2½	1	0-1/16	6	19
LH	.....	.....	.....	2-⅛	2-3/32	55/64	F..	1 31/64	45	1 17/32	45	.340	.006H	.010	.014	TC...	TC...	.020	.025	.....	.....	Au.	A.	2⅛	1¼	5	20	1½	†	0-⅛	4¾-6	20
LH	.....	.....	.....	2-⅛	2-3/32	55/64	F..	1 15/32	45	1 15/32	45	.340	.006H	.008H	.011	6A....	2½A.	.020	.025	.....	.....	Au.	A.	2 1/16	1	5	16	2	¼-¾	0-⅛	4¾-5½	21
PH	R...	....	Ch-6M....	3-⅛	1-3/16	1 1/16	F..	1½	30	1 7/16	30	11/32	.015C	.015C	.025	6B....	2B...	.021	.025	1½ "B"	.....	Ad.	..	2 7/16	1¾	12	32	3	1	¼	....	22
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	23
OM	O...	105	Ch-7.....	2-3/32	1-5/32	¾	F..	1 13/32	45	1 13/32	45	5/16	.013C	.013C	....	9½B...	3B...	.013	.025	4B...	1¼B.	Au.	A.	2	1 11/16	5	22	7	¾	1/16-⅛	8¼	24
OH	R...	....	Ch.....	2-3/32	1-5/32 1-3/16	13/16	R.	1 23/64	30	1 13/64	45	5/16	.010H	.010H	.012	4½B...	1½B.	.018	.025	2B...	¾B.	....	A.	1 11/16	1⅛	5	11	4½-5½	1	1/16-3/16	7½	25
OH	R...	....	Ch-J-9....	2-3/32	1-5/32 1-3/16	13/16	R.	1 23/64	30	1 23/64	45	5/16	.010H	.010H	.012	2A....	¾A.	.018	.025	TC...	.....	....	A.	2 1/16	1⅛	5	15	4-4½	1	1/16-3/16	7½	26
OH	R...	....	Ch-J-9....	2-3/32	1-5/32 1-3/16	13/16	R.	1 23/64	30	1 23/64	45	5/16	.010H	.010H	.012	4½B...	1½B.	.018	.025	4A...	1½A.	....	A.	2 1/16	1⅛	5	15	3-4	1	1/16-3/16	7½	27
OH	R...	....	Ch-J-9....	2-3/32	1-5/32 1-3/16	13/16	R.	1 23/64	30	1 23/64	45	5/16	.010H	.010H	.012	4½B...	1½B.	.018	.025	4A...	1½A.	....	A.	2 1/16	1⅛	5	15	3-4	1	1/16-3/16	7½	28
BH	G...	80	Ch-J-8....	2-3/32	2-3/16	¾	F..	1 3/16	45	1 3/16	45	5/16	.008	.010	....	10 2/3B.	4B...	.020	.022	BC...	BC...	Au.	A	1 13/16	1 3/16	5	13	0-½	1-1½	0-1/16	7	29
BH	G...	....	Ch-J-8....	2-3/32	2-3/16	¾	F..	1½	45	1 3/16	45	5/16	.008	.010	....	10 2/3B.	4B...	.020	.022	BC...	BC...	Au.	A.	1 13/16	1 3/16	7	20	.....	1-1½	0-1/16	7	30
BH	S...	155x	AC-K7....	2-⅛	2-5/32	⅞	F..	1 7/16	45	1 5/16	45	.345	No....	No....	No..	TC...	TC...	.015	.026	5B...	2¼B.	Au.	A.	2 13/32	2 1/32	7	25	-¼+½	¼-1	0-1/16	4⅝	31
MO	O...	....	.....	2-3/32	1-5/32	....	....	1.54	45	1.54	45	.311	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2 1/16	....	6	27	4	¾	1/16-⅛	....	32
M	O...	105	Ch-7.....	2-⅛	2-3/32	⅞	P..	1 11/16	45	1 11/16	45	1/16	.004C	.006C	.004	21B...	6¾B.	.020	.022	7B...	2¼B.	Au.	B.	2½	1	12	32	1½	1	1/16-⅛	7½	33
BH	G...	100	AC-K12...	2	1	⅞	F..	1¾	45	1 13/16	45	....	.008H	.015H	.008H	.....	.....	.022	.025	15Bm	.....	Au.	A.	2	1 27/64	7	17	2½	1½	⅛	7	34
BH	G...	90	AC-K12...	2	....	⅞	F..	1 23/64	45	1 15/32	45	....	.008	.015H	....	.....	.....	.020	.022	15Bm	.....	....	B.	2	1 15/64	7	21	2	1½	⅛	7	35
BH	G...	100	AG-G8....	2	1	⅞	F..	1 23/64	45	1 17/32	45	....	.015	.015	....	.....	.....	.022	.025	10Bm	3B...	Au.	A.	2	1 27/64	6	20	2½	1½	⅛	7	36
BH	S...	....	AC-K9....	2-⅛	2-3/16	55/64	P..	1 9/16	30	1 23/64	45	11/32	.008H	.011	....	5B....	2B...	.020	.040	TC...	TC...	Au.	A.	2 1/16	1	5	16	¼-1	⅛-1	1/16-3/16	5°51′	37
BH	S...	....	AC-K9....	2-⅛	2-3/16	55/64	P..	1 9/16	30	1 61/64	45	11/32	.008H	.011	....	TC...	TC...	.015	.040	2B...	¾B..	Au.	A.	2¼	1⅜	7	20	¼-1	⅛-1	1/16-1/16	5°51′	38
H	O...	110	AC-Y4....	2-1/16	1-3/16	⅞	F..	1.57	30	1.40	45	.340	.007H	.010H	....	5B....	.....	.015	.029	4B...	.....	Au.	..	2 3/32	1 3/16	7	17	2±½	1±¼	1/16±1/16	1½	39
H	O...	110	AC-Y4....	2-1/16	1-3/16	⅞	F..	1 11/32	30	1 13/32	45	11/32	.007H	.010H	....	5B....	.....	.015	.029	4B...	.....	Au.	A.	2 3/32	1 3/16	7	20	2±½	1±¼	1/16±1/16	1½	40
H	O...	110	AC-Y4....	2-1/16	2-5/32	⅞	F..	1 23/64	45	1 15/32	45	.340	.004H	.006H	.004	30B...	9¾B.	.015	.029	4B...	.....	Au.	B.	2 7/16	1 3/16	8	24	2±½	1±¼	1/16±1/16	1½	41
BP	O...	110	AC-Y4....	2-1/16	2-5/32	⅞	F..	1 23/64	45	1 23/64	45	.340	AA...	AA...	.004	TC...	TC...	.020	.029	6B...	.....	Au.	B.	2½	2¼	10	40	(b)	1-±¼	1/16±1/16	1½	42
Ste	R...	80	Ch-J-6....	2-1/16	1-3/16	⅞	F..	1 23/32	45	1 9/16	45	.372	AA...	AA...	.010	5A....	1½A.	.018	.025	2B...	½B..	Ad.	A	2¼	1¼	10	25	¾	1	1/16	8	43
Ste	R...	85	Ch-J-6....	2-1/16	1-3/16	⅞	F..	1 23/32	45	1 9/16	45	.372	AA...	AA...	.004	19B...	6B...	.018	.025	5B...	1½B.	Ad.	A.	2⅛	1½	11	38	¾	1	1/16	8	44
Ste	R...	85	Ch-J-6....	2-1/16	1-3/16	⅞	F..	1 23/32	45	1 9/16	45	.372	AA...	AA...	.004	19B...	6B...	.018	.025	5B...	1½B.	Ad.	A.	2⅛	1½	11	38	¾	1	1/16	8	45
LH	.....	.....	.....	2-1/16	2-5/32	55/64	F..	1 15/32	45	1 15/32	45	.340	.006H	.008H	.011	6A....	2½A.	.020	.025	.....	.....	Au.	..	1 13/16	1	5	15	1-3	¼-¾	0-1/16	4½-5½	46
LH	.....	.....	.....	2-1/16	2-5/32	55/64	F..	1 15/32	45	1 15/32	45	.340	.006H	.008H	.011	6A....	2½A.	.020	.025	.....	.....	Au.	..	1 13/16	1	5	15	1-3	¼-¾	0-1/8	4½-5½	47
BH	S...	141	AC-K7....	2-1/16	1-3/16	15/16	R.	1 19/32	30*	1 15/32	45	.310	.012H	.012H	.015	5B....	2B...	.020	.025	4B...	1½B.	Au.	A.	2	1 9/16	6	16	0	1	0	4°51′	48
BH	S...	....	AC-K7....	2-1/8	1-3/16	15/16	P..	1 15/32	30	1 11/32	45	.310	.012H	.012H	.015	5B....	2B...	.018	.025	4B...	1½B.	Au.	A.	2	1 1/16	7	19	0	1	0	4°51′	49
LH	R...	105	Ch-8.....	2-1/16	1-3/16	7/8	R.	1 15/32	45	1 9/32	45	11/32	.016C	.016C	.020	15B.....	.....	.020	.025	2B...	.....	Au.	A.	2 3/16	1 3/16	5½	....	1½	1½	1/16-⅛	9½	50
LH	R...	105	Ch-8.....	2-1/16	1-3/16	7/8	R.	1 15/32	45	1 9/32	45	11/32	.016C	.016C	.020	15B.....	.....	.020	.025	2B...	.....	Au.	A.	2 1/16	1 3/16	5½	....	(a)	½	1/16-⅛	5½	51
LH	R...	....	Ch-8.....	2-1/16	1-3/16	7/8	R.	1 15/32	45	1 9/32	45	11/32	.016C	.016C	.020	15B.....	.....	.020	.025	TC...	TC...	Au.	A.	1 7/16	1 1/16	8	....	(a)	½	1/16-⅛	5½	52
BH	G...	....	Ch-J-8....	2-3/32	2-3/16	¾	F..	1 3/16	45	1 3/16	45	5/16	.008	.010	....	10 2/3B.	4B...	.020	.022	BC...	BC...	Au.	A.	1 13/16	1 3/16	5	12½	0-½	1-1½	0-1/8	7	53
BM	G...	87	Var.18mm.	3-3/32	1-3/16	15/16	F..	1 13/32	45	1 15/32	45	.371	.004H	.006H	.010	TC...	TC...	.018	.025	4A...	1A...	Au.	A.	1 13/16	1 13/16	4	11	3	2	3/32	7½	54

m—Midland
Mar—Marvel
Mor—Morse
Nat—National
Nb—Needle Bearing
NS—Noblitt Sparks **O**—Own
OH—Own Hydraulic
OM—Own Mechanical
OP—Own, Power Operated
Old—Oldberg
PD—Presto Lite or Delco
Pur—Purolator
R—Ross
S—Saginaw
Spi—Spicer
Ste—Stewart-Warner
Str—Stromberg
Th—Thompson Products
Til—Tillotson **Tim**—Timken
UP—Universal Products
Wal—Walker
WG—Wagner Gear Co.
Whit—Whitney
Wil—Willard

ABBREVIATIONS

†—(−¼ to+½)
‡—7/16±1 (a)—(−¼ to+½)
*—Measured on rim of flywheel
A—After **A**—Above (Rod removal)
AA—Automatic Adjuster
Ad—Advanced **Au**—Automatic
(b)—(0° to—½)
B—(Valve and Ignition timing)—Before
B—Below (Rod removal)
Bm—Before Marks on Vibration Dampener
BC—Bottom Center
C—Cold (Tappet clearance)
(c)—60, —¼—+½; 65, 0—±¼
(d)—60, ¼—1; 65, 0—½
(e)—60—4° 51′; 65—5° 38′
F—(Pin locked in) Floating
H—Hot
Ma—Manual **N**—None
O—Out only
P—(Pin locked in) Piston
R—(Pin locked in) Rod
Re—Retarded
Ru—Rubber
RZ—Rzeppa (Gear Grinding Machine Co.)
S—Slides—Sectors **TC**—Top Center
Var—Various

Motor Car Price, Weight and Body Table

BODY, MAKE AND MODEL	Price	Shipping Weight
AMERICAN BANTAM		
Business Coupe	$335	
Standard Coupe	365	
Roadster	385	
De Luxe Coupe	385	
Cus. Roadster	445	
AUBURN		
Model 654		
Brougham	745	3214
Sedan	795	3219
Cabriolet	945	3182
Phaeton Sedan	995	3248
Coupe	835	3105
Cust. 654		
Brougham	852	3321
Coupe	942	3201
Sedan	902	3388
Cabriolet	1053	3282
Phaeton Sedan	1102	3348
Salon 654		
Brougham	932	3471
Coupe	990	3371
Sedan	982	3533
Cabriolet	1100	3432
Phaeton Sedan	1182	3498
Model 852		
Brougham	995	3475
Sedan	1095	3580
Cabriolet	1225	3415
Phaeton Sedan	1275	3565
Coupe	1085	3395
Sedan	1595	3571
Cust. 852		
Brougham	1088	3574
Coupe	1173	3493
Sedan	1188	3679
Cabriolet	1313	3511
Phaeton Sedan	1368	3664
Sedan	1688	3850
Salon 852		
Brougham	1168	3724
Coupe	1221	3643
Sedan	1268	3865
Cabriolet	1361	3641
Phaeton Sedan	1448	3814
Sedan	1768	4006
Supercharged 852		
Brougham	1445	3810
Sedan	1545	3915
Cabriolet	1675	3730
Phaeton Sedan	1725	3880
Coupe	1545	3693
Speedster	2245	3700
Sedan	2045	4090
BUICK		
Special 40		
Sedan, 2d	810	
Sed., Trunk, 2d	835	
Sedan, 4d	845	
Sed., Trunk, 4d	870	
Bus. Coupe, 2d	765	
Sport Coupe, 2d	825	
Conv. Coupe, 2d	905	
Conv. Phae., 4d	1145	
Century 60		
Sedan, 2d	1000	
Sed., Trunk, 2d	1025	
Sedan, 4d	1035	
Sed., Trunk, 4d	1060	
Sport Coupe, 2d	1015	
Conv. Coupe, 2d	1095	
Conv. Phae., 4d	1345	
Roadmaster 80		
Phae., Trunk, 4d	1565	
Sed., Trunk, 4d	1275	
For. Sed., Tk., 4d	1395	
Limited 90		
Sed., Trunk, 4d	1895	
Lim. Trunk, 4d	1995	
Sed., Trunk, 4d	1725	
For. Sed., Tk., 4d	1895	
CADILLAC		
V8 Series 60		
Sport Coupe, 2d	1445	
Tour. Sedan, 4d	1545	
Conv. Coupe, 2d	1575	
Conv. Sedan, 4d	1885	
V8-Series 65		
Tour. Sedan, 4d	1945	
V8-Series 70		
Sport Coupe, 2d		
Tour. Sedan, 4d		
Conv. Coupe, 2d		
Conv. Sedan, 4d		
V8-Series 75		
Tour. Sedan, 4d		
Tour. Sedan, 4d		
Imp. Sedan, 4d		
Im. Tour. Sed., 4d		
Town Sedan, 4d		
Formal Sed., 4d		
Conv. Sedan, 4d		
Town Car, 4d		
V12-Series 85		
Tour. Sedan, 4d		
Tour. Sedan, 4d		
Imp. Sedan, 4d		
Im. Tour Sed., 4d		
Town Sedan, 4d		
Formal Sed., 4d		
Conv. Sedan, 4d		
Town Car, 4d		
V16-Series 90		
Sedan, 4d		
Imp. Sedan, 4d		
CHEVROLET		
Master		
Sedan, 4d		
Coach, 2d		
Twn. Sed., Trk., 2d		
Spt. Sed., Trk., 4d		
Bus. Coupe, 2d		
Cabriolet, 2d		
Master De Luxe		
Sedan, 4d		
Coach, 2d		
Tn. Sed., Trk., 2d		
Spt. Sed., Trk., 4d		
Bus. Coupe, 2d		
Sport Coupe, 2d		
CHRYSLER		
Royal Six		
Bus. Coupe, 2d	715	
Coupe, 2d	765	
Tour. Bro., 2d	785	
Brougham, 2d	775	
Tour. Sedan, 4d	825	
Sedan, 4d	815	
Imperial Eight		
Bus. Coupe, 2d	925	
Coupe, 2d	965	
Tour. Bro., 2d	965	
Tour. Sedan, 4d	995	
Airflow		
Sedan, 4d	1475	
Coupe, 2d	1475	
CORD		
Westc. Sed., 4d	1995	3715
Beverly Sed., 4d	2095	3740
Conv. Coupe, 2d	2145	3815
Con. Pha. Sed., 2d	2195	3864
DE SOTO		
Bus. Coupe, 2d	685	
Coupe, rumb., 2d	735	
Brougham, 2d	745	
Tour Bro., 2d	755	
Sedan, 4d	785	
Tour. Sedan, 4d	795	
DODGE		
Bus. Coupe, 2d	640	2822
Coupe, 2d	695	2882
Conv. Coupe, 2d		
Sedan, 2d	705	2867
Tour. Sedan, 2d	715	
Sedan, 4d	745	2912
Tour. Sedan, 4d	755	2912
Sedan, 4d		
Conv. Sedan, 4d		
Limousine, 4d		
FORD		
V5-60		
Tudor Sedan		
Tud. Tour. Sed.		
Fordor Sedan		
Fordor Tr. Sed.		
Coupe, 5W		
Standard V8-85		
Tudor Sedan		
Tud. Tour. Sed.		
Fordor Sedan		
Fordor Tr. Sed.		
Coupe, 5W		
De Luxe V8-85		
Tudor Sedan		
Fordor Sedan		
Roadster		
Phaeton		
Coupe, 5W		
Tud. Tour. Sed.		
Fordor Tr. Sed.		
Cabriolet		
Conv. Sedan		
Conv. Cabriolet		
Club Coupe		
GRAHAM		
Crusader Series 6-85		
Tour. Sedan, 2d	595	2660
Tr. Sed., Trk., 2d	625	2675
Tour. Sedan, 4d	665	2695
Tr. Sed., Trk., 4d	695	2715
Cavalier Series 6-95		
Bus. Coupe, 2d	725	2815
Coupe, 2d	775	2880
Tour. Sedan, 2d	745	2930
Tr. Sed., Trk., 2d	775	2960
Tour. Sedan, 4d	775	2930
Tr. Sed., Trk., 4d	805	2945
Supercharger Series 116		
Bus. Coupe, 2d	865	2975
Coupe, 2d	895	3040
Tour. Sedan, 2d	865	3105
Tour. Sedan, 4d	895	3125
Tr. Sed., Trk., 2d	895	3105
Tr. Sed., Trk., 4d	925	3125
Cus. Su. Chr. Series 120		
Bus. Coupe, 2d	945	3020
Coupe, 2d	975	3055
Tour. Sedan, 4d	995	3200
Tr. Sed., Trk., 4d	1025	3200
HUDSON		
6-73		
Bus. Coupe, 2d	695	
Coupe, 3p., 2d	720	
Brougham, 4d	740	
Tour. Bro., 2d	765	
Vict. Coupe, 2d	765	
Sedan, 4d	790	
Tour. Sedan, 4d	815	
8-74 De Luxe		
Coupe, 3p, 2d	770	
Brougham, 2d	800	
Vict. Coupe, 2d	820	
Tour. Bro., 2d	825	
Sedan, 4d	840	
Tour. Sedan, 4d	865	
HUDSON (Cont.)		
8-75 Custom		
Coupe, 3p, 2d	885	
Brougham, 4d	895	
Vict. Coupe, 2d	905	
Tour. Bro., 2d	920	
Sedan, 2d	940	
Tour. Sedan, 2d	965	
8-76 De Luxe		
Sedan, 4d	865	
Tour. Sedan, 4d	890	
8-77 Custom		
Sedan, 4d	965	
Tour. Sedan, 4d	990	
LA SALLE		
Series 37-50		
Sport Coupe, 2d	995	
Tour. Sedan, 2d	1195	
Tour. Sedan, 4d	1145	
Conv. Coupe, 2d	1175	
Conv. Sedan, 4d	1485	
LINCOLN		
Zephyr		
Coupe, 3p, 2d	1090	
Sedan, 4d	1190	
Coupe-sedan, 2d	1170	
Town Lim., 4d	1350	
NASH		
Lafayette-400		
Coupe, 2d	595	
Coupe, 2d	650	
Vict. Sedan, 2d	655	
Sedan, 4d	700	
Cabriolet, 2d	740	
Ambassador Six		
Coupe, 2d	755	
Coupe, 2d	795	
Vict. Sedan, 2d	795	
Sedan, 4d	845	
Cabriolet, 2d	860	
Ambassador Eight		
Coupe, 2d	855	
Coupe, 2d	895	
Vict. Sedan, 2d	895	
Sedan, 4d	945	
Cabriolet, 2d	960	
OLDSMOBILE		
Six		
Sedan, 2d	740	
Tr. Sed., Trk., 2d	765	
Sedan, 4d	790	
Tr. Sed., Trk., 4d	815	
Bus. Coupe, 2d	685	
Conv. Coupe, 2d	835	
Club Coupe, 2d	740	
Eight		
Bus. Coupe, 2d	785	
Club Coupe, 2d	840	
Sedan, 2d	840	
Tour. Sedan, 2d	865	
Sedan, 4d	890	
Tour. Sedan, 4d	915	
Conv. Coupe, 2d	935	
PACKARD		
Model 115-C		
Tour. Sedan	910	3310
Sedan	895	3265
Club Sedan	900	3275
PACKARD (Cont.)		
Tour. Coupe	860	3235
Sport Coupe	840	3215
Conv. Coupe	910	3285
Bus. Coupe	795	3140
Model 120-C		
Tour. Sedan	1060	3520
Sedan	1045	3465
Club Sedan	1050	3455
Tour. Coupe	1010	3435
Sport Coupe	990	3415
Conv. Coupe	1060	3485
Conv. Sedan	1355	3630
Bus. Coupe	945	3340
Model 120-CD-Del.		
Tour. Sedan	1270	3550
Club Sedan	1260	3485
Tour. Coupe	1220	3465
Tour. Sed., 7p	1690	3835
Tour. Lim.	1840	3900
Model 1500 Super Eight		
Tour. Sedan	2335	4530
Model 1501 Super Eight		
Formal Sedan	3235	4795
Tour. Sedan	2535	4670
Club Sedan	2530	4600
Coupe	2510	4595
Coupe	2420	4585
Coupe Roadster	2680	4580
Victoria	3150	4650
A.W. Cab. (LeB)	4850	4965
Model 1502 Super Eight		
Tour. Sed., 7p	2705	4700
Tour. Lim., 7p	2840	4815
Conv. Sed., 5p	3350	4945
A.W.T. Car (LeB)	4990	5360
Bus. Sedan	2580	
Bus. Lim.	2715	
Model 1506 Twelve		
Tour. Sedan	3490	5335
Model 1507 Twelve		
Formal Sedan	4260	5500
Tour. Sedan	3560	5525
Club Sedan	3660	5520
Coupe	3590	5415
Coupe	3420	5255
Coupe Roadster	3450	5255
Victoria	4490	5345
A.W. Cab. (LeB)	5700	5740
Model 1508 Twelve		
Tour. Sedan	3885	5600
Tour. Lim.	4085	5660
Conv. Sedan	4650	5680
A.W.T. Car (LeB)	5900	5790
PIERCE-ARROW		
Eight Model 1701		
Sedan	3195	5675
Club Sedan	3295	5600
Coupe	3195	5645
Conv. Roadster	3295	5590
Club Berline	3445	
Formal Sedan	3445	
Sedan, 7 pass.	3500	5820
Enc. Dr. Lim.	3650	5860
Brunn Town Bro.	5295	5840
Conv. Sedan	4100	
Twelve Model 1702		
Sedan	3695	5920
Club Sedan	3795	5850
Coupe	3695	5855
Conv. Roadster	3795	5800
Club Berline	3945	
Formal Sedan	3945	
Sedan, 7 pass.	4000	6065
Enc. Dr. Lim.	4150	6105
PIERCE-ARROW (Cont.)		
Brunn Town Bro.	5795	6085
Conv. Sedan	4600	5921
Twelve 1703		
Sedan	4795	6125
Enc. Dr. Lim.	4995	6145
PLYMOUTH		
Six P3	510	2700
Coupe, 2d	550	2770
Sedan, 2d	595	2770
Sedan, 4d		
De Luxe Six-P4	575	2765
Coupe, 2d	625	
Coupe, 2d		
Conv. Coupe, 2d	640	2825
Sedan, 2d	670	2840
Sedan, 4d	650	2840
Tour. Sedan, 2d	680	2840
Tour. Sedan, 4d		
Sedan, 4d		
PONTIAC		
De Luxe Six		
Bus. Coupe, 2d		
Sedan, 2d		
Sport Coupe, 2d		
Tour. Sedan, 2d		
Cabriolet, 2d		
Sedan, 4d		
Tour. Sedan, 4d		
De Luxe Eight		
Bus. Coupe, 2d		
Sedan, 2d		
Sport Coupe, 2d		
Tour. Sedan, 2d		
Cabriolet, 2d		
Sedan, 4d		
Tour. Sedan, 4d		
STUDEBAKER		
Dictator		
Bus. Coupe, 2d	665	2965
Cus. Coupe, 2d	715	3005
Cus. Coupe, 2d	740	3045
Cruis. Sedan, 4d	795	3140
Cus. Sedan, 4d	775	3130
St. Reg. Cr. Sd., 2d	745	3100
St. Reg. Cr. Sd., 2d	765	3100
President		
Cus. Coupe, 2d	965	3510
Cus. Coupe, 2d	995	3540
Cus. Sedan, 4d	1045	3620
Cruis. Sedan, 4d	1065	3635
St. Reg. Cu. Sd., 2d	1015	3600
St. Reg. Cu. Sd., 2d	1035	3610
TERRAPLANE		
6-71 De Luxe		
Bus. Coupe, 2d	595	
Coupe, 3p, 2d	605	
Brougham, 2d	625	
Tour. Bro., 2d	645	
Victoria, 2d	650	
Sedan, 4d	675	
Tour. Sedan, 4d	695	
6-72 Super.		
Coupe, 3p, 2d	680	
Brougham, 2d	680	
Tour. Bro., 2d	700	
Victoria, 2d	700	
Sedan, 4d	725	
Tour. Sedan, 4d	745	
WILLYS		
Model 37		
Coupe, 2d		2120
Sedan, 4d		2250

Great Guns!

LOOK AT THIS PRICE REDUCTION ON PERFECT CIRCLE PISTON EXPANDERS

Sensational Savings

ON FORD AND PLYMOUTH MODELS

WERE 85¢ NOW 60¢

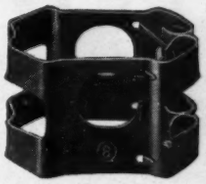


HERE'S a sensational price reduction that'll enable you to sell Perfect Circle Piston Expanders with *every* ring replacement, on Fords and Plymouths. Tremendous demand for Perfect Circle Expanders in these fast-selling sizes has made it possible to pass along big-production savings to your customers.

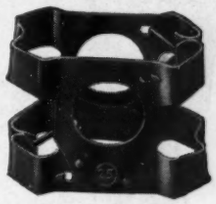
More than twice as many Perfect Circle Piston Expanders have been installed in Ford V-8s and Plymouths this year, as in any other like period. And now with these new low prices, you will get still more expander business.

Perfect Circle Piston Expanders are individually engineered for each different type of piston. Through scientific expansion these expanders *permanently* restore the original fit of worn and collapsed pistons, and permit new rings to ride squarely on the cylinder walls. They *stop piston slap,* make the ring job *more efficient,* and make it last longer.

Take full advantage of these new low prices to increase your sales and insure customer satisfaction. Recommend Perfect Circle Piston Expanders for *every* aluminum piston job.



For Ford V-8



For Plymouth

THE PERFECT CIRCLE COMPANIES • HAGERSTOWN, INDIANA, AND TORONTO, CANADA

PERFECT CIRCLE

REG. U. S. PAT OFF.

PISTON EXPANDERS

Vanderbilt Cup Race Results

(Continued from page 51)

Only five cars found it necessary to change spark plugs and the official pit stops recorded only a single tire change. In this connection, Firestone tires were used almost exclusively by all the American entered cars, while Dunlops and Pirrelli tires were used by the English and Italians respectively. To secure better traction, rear tires were of bigger section than the front.

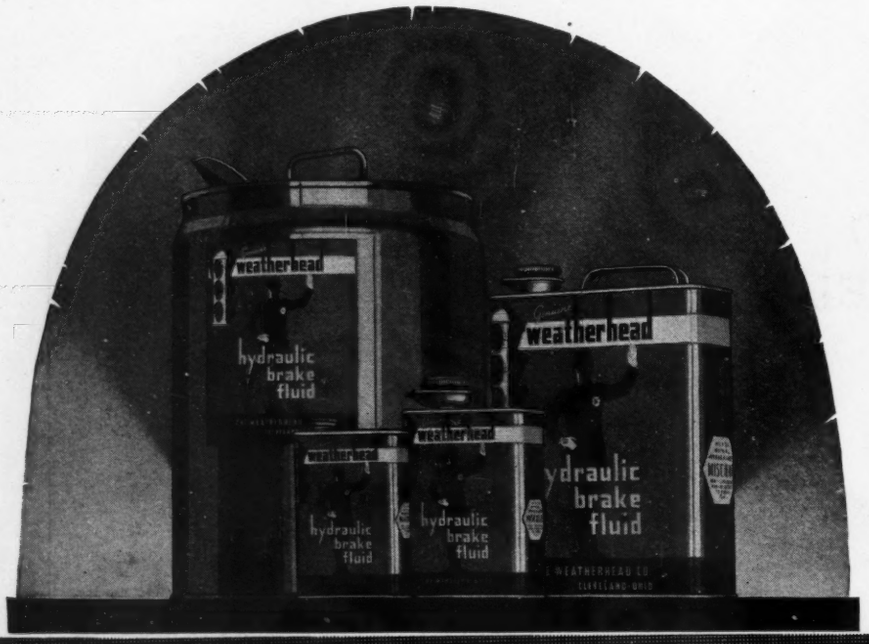
As noted in the table on page 59, Bosch magnetos were used on the majority of the entrants, although Scintilla, Edison-Splitdorf and a Delco Remy battery ignition were also used. Thirty-seven cars were fitted with Champion spark plugs while six had Bosch and one, Bowes plugs.

New Departure bearings were used extensively as was Packard ignition cable.

No information is available on the amount of fuel used during the race. However, it is interesting to note that most of the foreign entries made two stops for fuel, whereas the majority of the Americans made only one. This was probably the result of the fuel limits set at the recent Indianapolis race.

Compression ratio ranged from 10 to 12 to 1 and a typical fuel consisted of 48 per cent benzol, 48 per cent methyl alcohol, 4 per cent gasoline and approximately 3 to 5 c.c. of tetra ethyl lead per gallon of fuel.

The two midget race cars which were driven by Bob Swanson and Orendurff, gave a good account of themselves. Swanson was well up in the first ten when he ran out of fuel on the back stretch. So much time was lost in getting fuel to the car that his chances of finishing in the money became hopeless.



WEATHERHEAD *Presents*

"the perfect mixer" **Hydraulic Brake Fluid**

for perfect blending and service. No matter what fluid is already in the tank, Weatherhead brake fluid will mix perfectly with it.

Superior in quality, this genuine fluid marks the greatest advancement in brake fluids since the invention of hydraulic brakes.

Non-gumming, non-corrosive, non-injurious to rubber, the Heavy Duty "perfect mixer" is the fluid for you. One grade for all cars. Ask your jobber!

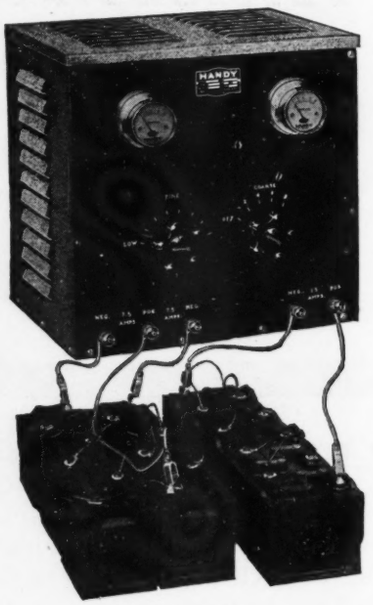
Available in pint, quart, gallon and 5-gallon containers.

THE WEATHERHEAD CO.

620-714 Frankfort Ave. • Cleveland, Ohio

Baldor Has New Battery Charger

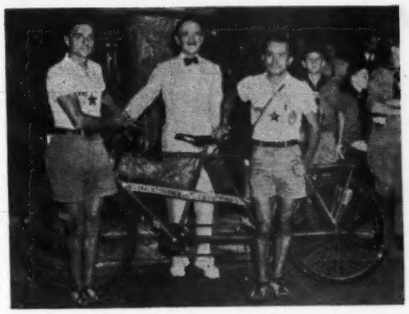
The Baldor Electric Co., St. Louis, Mo., has announced an addition to their line of battery chargers in the new model 8-16B, which uses a 15 ampere bulb instead of the conventional 6 ampere bulb. This charger is designed to charge 8 batteries at 15 amperes or 16 batteries at 7.5 amperes; if desired it can be used to charge one line of batteries at 15 amperes while charging two other lines at 7.5 amperes, without overloading the bulb.



Road Racing Organizer Dies

Fred W. Jencks, 75, one of the organizers of the famous Elgin Auto Road Race at Elgin, Ill., died on Oct. 13 of a heart attack while at work in his insurance brokerage office in downtown Elgin. Mr. Jencks also helped to organize the Grand Highway Association, which was the original group that advocated hard roads for auto travel. He helped to organize the Elgin Motor Club, which was one of the charter member organizations of the American Automobile Association.

Edelmann & Co., Chicago, Ill., makers of brass fittings, has announced a metal shelving unit to fit into the regular steel bin section. The unit is 33 in. long, 14½ in. high and 11½ in. deep, and contains 56 fibre board drawers. Each drawer is labeled in colors showing a picture of the contents, the stock number and the size.



TWO bicyclists, who rode their tandem from Buenos Aires to Washington, a distance of 14,000 miles, and arrived at the Pan-American Building last month after an 18 months ride. Dr. Leo Rowe, Director of the Pan-American Union, (center) congratulates the bicyclists

Van Norman Expands

Van Norman Machine Tool Co., Springfield, Mass., has started work on a two-story brick and concrete addition to the main plant. The new building will provide about 14,000 sq. ft. of additional floor space, and will house $60,000 dollars worth of new production equipment.

One factor in the decision to expand the plant was the recently announced purchase of the brake drum lathe business of the Aff Machine Works.

Announcement is also made of the following promotions. J. Y. Scott, formerly a director and vice-president, is now executive vice-president and general manager. L. F. Hunderup, formerly general sales manager, has been appointed assistant general manager and elected a director. R. W. Porter, formerly cashier and credit manager, is now assistant treasurer. T. W. Baush, formerly assistant sales manager, is now export manager and manager of the sales department. C. E. Holmes, formerly territorial supervisor, is now sales promotion manager. H. G. Hoglund will continue to supervise machine tool sales. Recent additions to the sales force include W. N. Abbott, H. J. Swartz and R. B. Clark.

Senator James Couzens Dies

Death came to Senator James Couzens on Thursday, Oct. 22. The 64-year-old millionaire ex-manufacturer and ardent New Dealer failed to rally following an operation at Harper Hospital, Detroit.

Couzens, a native Canadian, had a colorful career in business and in politics. He was traffic manager for a retail coal dealer in Detroit when Henry Ford entered the automobile scene. Seeking to organize his own company, Ford was able to raise only $28,000 of the needed $100,000. Couzens became interested and subscribed for 25 shares, or $2,500 worth, when the Ford Motor Co. was incorporated in June, 1903, assigning one of them to a sister.

Leaving his desk at the coal yard, Jim Couzens took over the routing of buying and selling and of financing for the new Ford Motor Co. Teamed with him in engineering and production was C. Harold Wills, later to build the Wills Ste. Clair automobile at Marysville, Mich. Ford, Couzens and Wills formed a trio that went far.

Although he severed active connection with Ford in 1916, Couzens remained a director until 1919, when Ford bought out all other stockholders. A 1900 per cent stock dividend in 1908 had increased Couzens origial 24 shares to 2180. For these he received $29,308,857—said to be the top price paid by Ford to any stockholder. In addition, it is estimated that in the 16 years from 1903 to 1919 Couzens took out fully $5,000,000 in dividends.

His departure from the Ford Motor Co. released Couzens for a civic career which he long had visualized. He became mayor of Detroit, in 1922 went to the U. S. Senate for a short term and was re-elected in 1924 and 1930.

In the Senate he developed rapidly into a liberal. In this year's primary campaign, which resulted in his retirement, Couzens refused to take the stump. He contented himself with an indorsement of Roosevelt and the observation that it was more important for the President to be re-elected than for himself to return to the Senate. His opponent won.



Ready for Action . . . ARE YOU?

Amco BRAKE LINING

November days—hunters afoot. Don't be surprised, when you round a bend, to find a little squad like this. Give them their share of the road and keep your brake-foot "cocked" as you pass. You might want to make one of those famous AMCO-lined stops. Could you?

ASBESTOS MANUFACTURING CO., HUNTINGTON, IND.

*New Low Prices**

HEIN-WERNER

7 TON CAPACITY

HYDRAULIC JACK



*$11.75

WEST COAST $12.70

PERFORMANCE proves it is *BUILT RIGHT*

QUICK, EASY SALES prove it is *PRICED RIGHT*

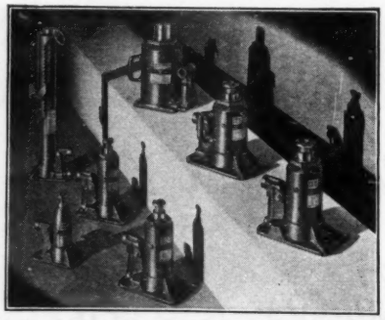
It is no wonder that this 7 ton capacity hydraulic jack is so popular. It is compact, sturdy and dependable, unmatched for severe service—yet priced so low that it costs little more than others ask for ordinary passenger car and light truck jacks. Skeptics said it couldn't be done—but Hein-Werner has done it—and will continue to set the pace in 1937.

ALL H-W JACKS ARE TESTED AT 1½ TIMES THEIR RATED CAPACITY . . .

This Model E-7.9A, like all others in this complete line, is an unmatched value. Low-9" . . . Lift-6¼" . . . Extension-4⅜" . . . High-19⅝" . . . Weight-28½ lbs. . . . Dealer price $11.75 (West Coast $12.70).

A Complete Line

Other models in this line include the "Bullet" Model, 1½ ton capacity at $2.80 (West Coast $3.10) . . . Light Truck Special, 2 ton model, $4.15 (West Coast $4.55) . . . For light trucks, 3 ton models at $6.95 (West Coast $7.45) . . . 5 ton models $8.95 (West Coast $9.60) . . . For heavy trucks, buses and shop use—12 ton models $17.50 (West Coast $18.50) . . . 20 ton models $30.00 (West Coast $31.00).—and for modern passenger cars, our new BUMPER-LIFT Model at a new low price of $4.95 (West Coast $5.65) . . . Above prices net to dealer.



HEIN-WERNER MOTOR PARTS CORP.
Waukesha, Wisconsin

FEW MODELS ENGINEERED TO DO THE WORK OF MANY
HEIN-WERNER hydraulic JACKS

Diamond T Announces Diesel Trucks

Diamond T Motor Car Co. will have two new Diesel truck models among its exhibits at the coming Chicago automobile show. These are the Model D20, of 1½-3 tons capacity, and the Model D30, 2¼-4 tons capacity. The former has a chassis base price of $2,150, the latter of $2,750. Gross-weight ratings are 13,000 and 17,000 lb. respectively.

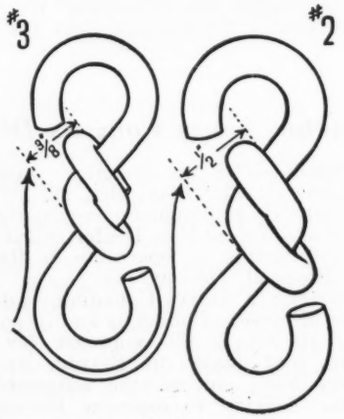
Hercules engines are used in both models. The smaller chassis is equipped with a six-cylinder 3½ by 4½-in. engine (260 cu. in.) developing a maximum torque of 178 lb.-ft. and a maximum output of 77 hp. at 2600 r.p.m., while the larger one has a six-cylinder 3¾ by 4½-in. engine (298 cu. in.) developing a maximum torque of 208 lb.-ft. and a maximum output of 86 hp. at 2600 r.p.m.

The Bosch injection system is employed with plunger-type fuel pump, pintle-type nozzles, and vacuum governor. An oil-bath air cleaner and a recirculating type thermostatic valve are standard equipment. Rubber engine mountings are provided to absorb engine vibrations.

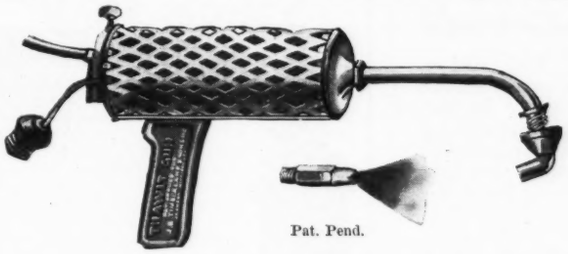
Both models have full-floating, two-speed rear axles. In the D20 the rear axle ratio is 5.14 in the high range and 7.15 in low. For the model D30 two combinations of ratios are available. The fast axle gives a reduction of 5.62 in the high range, with exceptional fuel economy and a top speed of approximately 48 m.p.h., and a reduction of 7.65 in the low range, providing much greater pulling power for grades or soft roads. The slower axle offers a reduction of 6.43 with a top speed of 42 m.p.h. combined with a ratio of 8.74 for use under severe conditions.

Practo Link Lox Repairs Tire Chains

The International Mfg. Co., 712 Beacon Street, Boston, Mass., has announced a new self-locking repair link for repairing broken chains. Easy to



install, and locked in place by chain tension, the new Practo Link Lox is made in two sizes; No. 2 fits heavy duty chains and has a capacity of 2000 lb., and No. 3 fits regular chains and has a capacity of 1000 lb. Sample will be supplied free by writing manufacturer.



Pat. Pend.

Increase Winter Service Profits With the "THAWIT" Heat Gun

List price

$12.00

Gun attaches, quickly, to any air hose line by tightening one thumb screw against your regular chuck. Then plug in any 110 volt socket and almost instantly a hot blast of about 400 degrees pours into the chilled chamber. Thaws differential grease . . . frozen engine oil . . . frozen radiators . . . frozen gas line . . . shackle bolts and other parts. Drys ignition systems, paint, enamel or rush repair jobs.



Ruggedly built of best materials, its four pounds of weight is perfectly balanced. Has a tapered spring seal tip that tightly hugs the elbow nozzle and makes a perfect seal under all operating conditions. This tip may be easily removed and the "Thawit" gun is then ready for general thawing jobs. Speeds up greasing operations and increases sale of lubricants. Write for complete information.

Cross section of rear axle, showing **air seal tip in position.** Works same in transmission case.

J. B. Timberlake & Sons, Inc.
Jackson, Michigan, U. S. A.

"KING" TESTER Won NEW Customers and Sold MORE parts

FOR

HARRY G. STECHER



"The 'KING' Tester is the last piece of equipment I would part with. I have made a number of tests and corrected the trouble when other machines of very much higher prices had failed. It has sold many coils, condensers and points for me and has won many good customers and friends." Harry G. Stecher, 905 French Street, Wilmington, Delaware.



"KING" MT-190 $175.00

ALL UNITS SOLD ON DEFERRED PAYMENTS

a Quality "KING" BATTERY CHARGER for only $25.00



The "KING" Type Special 12 Battery Charger will charge from one to twelve 6-volt batteries at a 6-ampere rate. It has the standard "KING" transformer, all-welded steel case, and is built for years of service.



Ask Your Jobber or Write Us Jobber's Name

The ELECTRIC HEAT CONTROL Co.
9123 INMAN AVE., CLEVELAND, OHIO

KING · Good Products Since 1914 · KING

The DOOR IS OPEN!



New Profits await you behind the cover of

HYGRADE'S SPEEDOMETER CATALOG

Shafting - Tips - Casing - Ferrules

NO shop can afford to ignore the profits from Speedometer overhaul! The era of fast driving and long tours has greatly increased the number of breakdowns in shafting and casings—breakdowns that are hastened by neglect to lubricate.

The car driver today not only has to know his speed but must keep his speedometer running for an accurate check on lubrication.

Hygrade's Speedometer Parts Catalog and Car Guide, just off the press, opens the door to new profits in this commonly neglected branch of repair.

A small investment starts the ball rolling. Hygrade's complete line of popular "ready made" speedometer cables gives you the necessary assemblies for servicing over 300 models of 36 makes of cars—with only twenty units! You'll find in this valuable catalog just the right assortment for your particular type of business.

Write for the Catalog that "Opens the Door to New Profits." Ask your jobber for Hygrade Parts for Carburetors, Fuel Pumps, etc. Send us his name if he can't supply you.

THE BUSINESS-BUILDING LINE

Facsimile Service Parts for:
CARBURETORS
FUEL PUMPS
SHOCK ABSORBERS
SPEEDOMETERS

HY-FLEX
FUEL LINES
GAS LINES
SLIP-GRIP
TERMINALS

HYGRADE PRODUCTS CO., 516 W. 34th St., New York, N. Y.

NORTON ABRASIVES

VALVE WHEELS



Made to precise specifications based on years of experience in automotive grinding wheel production. Ask your Jobber about them, or return the coupon.

BEHR-MANNING • TROY, N. Y.
(DIVISION OF NORTON COMPANY)

BEHR-MANNING • TROY, N.Y.

Please send information on NORTON Valve Wheels for a _____ Machine.

Name _____

Street _____

City _____ **State** _____ MA116

LOWER COSTS

are assured by using Gardiner Flux-Filled Solder. Its uniform high quality enables both skilled and inexperienced help to do faster and neater work — a saving on labor and material.



Packed in 1, 5 and 20-lb. spools.

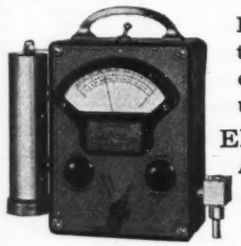
Due to modern methods and volume production Gardiner Solder costs less than even ordinary solders. Your jobber can supply you.

We also make bar, body and solid wire solders and babbitts.

Gardiner METAL CO.

4839 So. Campbell Ave., Chicago, Ill.

YOU CAN'T BEAT IT!



Proven by the fact that engineers use it.

EXHAUST ANALYST

MODEL EP-1

$45

STROMBERG MOTOSCOPE CORP.

2709 BELMONT AVE. CHICAGO

Automobile Trimming Specials

Complete Cushions with springs $1.50 to $2.00

Cushions with cotton only 50¢ to $1.00

Sewing Thread 16/4 Blk. good grade 55¢ lb.

Sewing Thread 16/4 Drab $1.10

Fibre Boards 7¢ up

Assorted Body Cloth Remnants 75¢ yd.

Assorted Body Cloth Shorts 30¢ lb.

Imitation Leather Remnants 12¢ lb.

Rubber Mats 20¢ up

JAXON CO.

8311 Epworth Boulevard, Detroit, Mich.

New High-Speed DREDNAUT BUMPERJACK $2.85 LIST



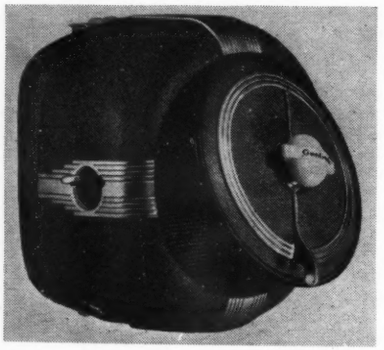
FASTER and *EASIER* to operate — more positive action — thoroughly adaptable to all overhanging "fronts" and "rears" of new cars. Simply lift sliding rest to bumper bar and pump the handle.

AUTO SPECIALTIES MFG. COMPANY

ST. JOSEPH, MICHIGAN

Goodrich Announces New Hot Water Heater

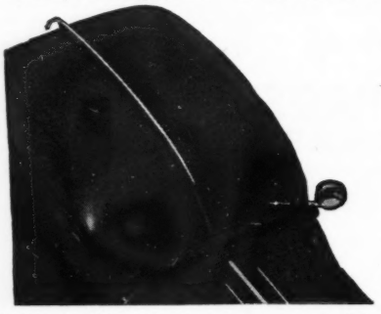
The B. F. Goodrich Co., Akron, Ohio, has announced a new DeLuxe model boiler type hot water heater, with provision made for connecting a windshield defroster. The streamlined design with fully rounded corners protects stockings and shoes from the danger of being torn or nicked. It is available in two finishes, a rich gray or tan satin finished crackle to match the interior of the car. A new illuminated control switch, a new quick-starting, high speed motor and the



use of highest quality Goodrich braided hose to withstand the heat are other features. In addition to the DeLuxe model, the company also has the "Compact" and "Standard" hot water heaters in its line for the coming season.

Roof Aerial for Turret Top Cars

A decorative aerial for turret top automobiles is announced by the Wedge Mfg. Co., 2336 South Michigan Avenue, Chicago, Ill. It attaches to



the outside of the top by rubber vacuum cups, and is shipped straight so that it can be made to conform to the contour of the top. Price complete, including lead in and vacuum cup posts, $3.85.

Hold Mass Meeting

The Motor Trades Assn. of Southern California held a mass meeting in Los Angeles, Oct. 8. A picnic sponsored by the association took place Oct. 18. Officers of the trade group are J. A. Aregood, president; D. C. Kirkpatrick, L. B. Holston, L. O. Gibson, C. C. Reynolds, W. F. Robinson, Albert Buffa and Clifford Minner, vice-presidents; J. W. Punter, treasurer; G. E. Waltz, secretary; R. B. Roginson, executive secretary.



Flint Loss-Proof Compression SPARK PLUG!

Highly endorsed by fleet owners because of their uniformly excellent performance, longer service and lower cost per mile. Made in the correct types for every motor.

Order from your jobber! Write for literature!

C. V. S. Manufacturing Co.
Flint, Michigan

HACKETT *Universal* ROLLER



NOW IN BIG DEMAND

New Type Universal Blade, fits all arms. Blade rolls in action, no bending of rubbers. 7-ply wiping features give 100% wiping, therefore, clear vision at all times.

HACKETT AUTOMOTIVE ACCESSORIES CORP.
Providence, R. I. U. S. A.

Mfrs. of Wiper Arms, Dual Wiper Attachments, Inside Wipers, License Plate Frames, Cigar Lighters, Magnetic Trouble Lights, Shimmy Stops, Parking and Fender Guides, etc.

FASTIK PRICE MARKED PATCHES



New Merchandising Plan Increases Dealers Patch Sales and Tire Repairs.

FASTIK DEALERS

Don't lose patch sales to chain stores

FASTIK PATCHES ARE NOT SOLD BY GIPS OR CHAINS

INCREASE YOUR SALES MAKE MORE MONEY

Ask Your Jobber or Write the Manufacturer

H. R. THOMSON, INC.

1059-1073 EAST 76th ST., CHICAGO, ILL.

Radiator, battery repairing and all sorts of soldering jobs easily done with the

TORIT Acetylene Torch No. 23

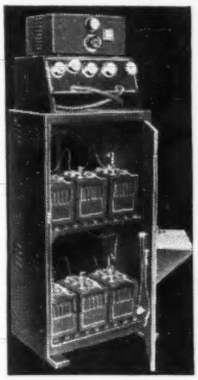


Simply connect to Presto Tank. Includes a set of 4 tips. Price, $6.75.

TORIT MFG. CO.
290 Walnut St., St. Paul, Minn.

Be sure it's a Genuine PUROLATOR

MAKE MONEY
WITH
BESCO COMPLETE BATTERY SHOP



Profitable Sales and Service

These new charge-test units are complete battery shops in themselves. Using small space they provide facilities for charging and testing batteries, and are a battery merchandiser all in one. Yet they are simply designed, convenient and practical to use.

25" Wide, 16" Deep, and 69" Over-all.

Requires only 3 square feet of floor space.

Completely wired in conduit with necessary charging jumpers furnished, also battery carrier.

Batteries on charge are completely hidden from view, making it an attractive, impressive looking sales unit.

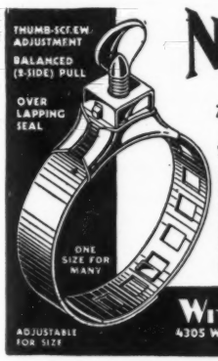
PRICES

No. 717—Complete as shown, including 6 Battery Charger and Tester. $99.50

No. 717—Complete as shown without Charger 67.50

Write for complete descriptive catalog page.

BESCO PRODUCTS, Inc.
7524-30 Greenwood Ave., Chicago, Illinois



TRADE MARK
NOC-OUT HOSE CLAMPS
THE HOSE CLAMP WITH THE THUMB SCREW

Standard equipment of the automotive industry. Adjustable - one size equals many. Quick tightening, perfect seal. At all Jobbers.

Pat. No. 1,382,813.

WITTEK MFG. CO.
4305 W. 24th Pl., Chicago, U. S. A.

LINKERT
The
WORLD'S OUTSTANDING
CARBURETOR
and
PERFECT PARTS
Replacement Line for All Popular Carburetors
LINKERT CARBURETOR CO.
INDIANAPOLIS, INDIANA

Sinko SPIN-UR-WHEEL



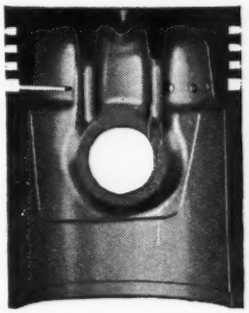
Brilliant sinkolite knob, fluted or oval, on chrome mount that fits all wheels. A snappy seller. Five colors available. Three color silent salesman. Display stand.

Ask your jobber.

SINKO TOOL & MFG. CO.
351-371 N. Crawford Ave., Chicago, Ill.

Thompson Makes Heavy-Duty "Aerotype" Piston

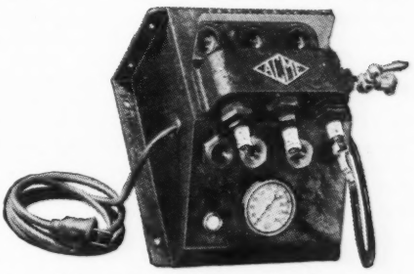
A double-thick skirt, extra heavy top ribs, diamond-bored pin holes and larger pin bosses are features of an alloy piston offered by Thompson Products, Inc., Cleveland, Ohio, for hard service in trucks, busses, tractors and passenger car engines. The



"Aerotype" piston is said to be made of a special "Chexpan" alloy for which an exceptionally low co-efficient of expansion and other favorable characteristics for wear-resistance and strength are claimed.

Spark Plug Tester Compares Old with New

A new spark plug tester has been announced by the Acme Electric & Mfg. Co., Cleveland, Ohio. It is a comparative tester, the old plug being placed in the instrument beside a new plug, and wire connection is attached



to either. Air pressure and electric current is turned on, and the plug fires inside the glass enclosed compression chamber. A chromium mirror directly behind the compression chamber reflects the firing action. Tester may be attached to wall or bench.

New Hydraulic Brake Fluid Developed by Weatherhead

The Weatherhead Co., Cleveland, Ohio, has announced a new hydraulic brake fluid which they claim can be successfully mixed with any other make of fluid. It is said to be non-gumming, non-corrosive and non-injurious to rubber. Available in pint, quart, gallon and five gallon containers.

P & D Manufacturing Co., Long Island City, N. Y., manufacturers of ignition replacement parts, is offering patented designed lock type merchandising cabinets for dealers and service stations. Model AD-100, contains 108 separate compartments to accommodate contact points, condensers, brushes, rotors, coils, etc. An ignition tester is included, which will test ignition parts and wiring while the motor is running.

MARVEL MYSTERY OIL
FOR
MOTOR TUNE-UP

Motors must be freed up and valve gums removed before adjusting.

MARVEL MYSTERY OIL frees motors rapidly, and produces continued improvement after treatment.

MOTOR BREAK-IN



Light oils are necessary for MOTOR BREAK-IN but are usually weak in film strength.

MARVEL MYSTERY OIL is ideal for breaking in motors. 20% added to a good S.A.E. 30 crank case oil produces a light oil which is much higher in film strength than heavy oils.

BEARINGS

Bearing metals and alloys, supersensitive to corrosion, are safe with MARVEL MYSTERY OIL as it will not affect metal.

This is important when breaking in motors or on mechanisms where a number of different metals are used.

SAFE and EASY TO USE

MARVEL MYSTERY OIL is easy to use, it is not inflammable, has a pleasant odor, and is harmless to the most sensitive skin.

MARVEL MYSTERY OIL has no light ends to evaporate and does not deteriorate in an open container.

Marvel Mystery Oil Is a Vital Aid to Lubrication

Send for Circular
ORDER THRU YOUR JOBBER

EMEROL MANUFAC TURING CO., Inc
242 West 69th Street, New York City



SLEETEX

GOES on the AIR!

Continuing and enlarging a highly successful radio program idea from last season, SLEETEX will go on the air again this year starting next month. Right when motorists are naturally thinking about safe Winter driving and hearing their local weather forecasts and storm warnings, SLEETEX will broadcast its powerful selling messages over sixteen major stations across the country in the following key cities:

BOSTON	KANSAS CITY
BUFFALO	MINNEAPOLIS
CHICAGO	NEW YORK
CINCINNATI	PHILADELPHIA
CLEVELAND	PITTSBURGH
COLUMBUS	ST. LOUIS
DENVER	SPRINGFIELD
DETROIT	SYRACUSE

So, don't delay—get the profit winning facts now on the SLEETEX WINDSHIELD DEFROSTER BLADE —the big WINTER WINNER.

•

The SLEETEX CO., Inc.

404 Fourth Avenue, New York City

SLEETEX

WINDSHIELD DEFROSTER BLADE

The

longer a repair job lasts, the more likely it is to win you a permanent customer. Pistons fitted with Thexton Expanders STAY in trim!

THEXTON

PISTON SKIRT EXPANDERS

THEXTON MANUFACTURING CO., Inc.

Minneapolis, Minnesota

Canadian Branch • Chatham, Ontario

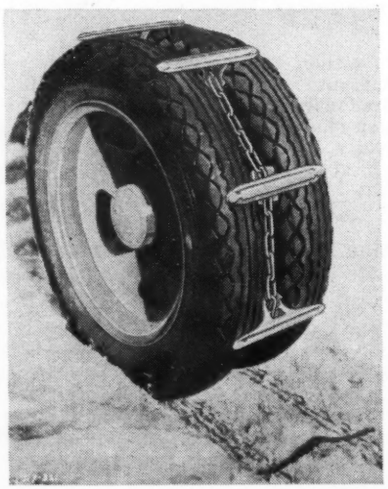
Pocket-Size Instruments Offered by General Electric

A complete new line of pocket-size voltmeters, ammeters and milliammeters, designated as Type AS-5, has been announced by the General Electric Co., Schenectady, N. Y. The overall dimensions of the standard unit are 5½ in. by 3½ in., by 2 in., and the weight is only 12 ounces. The instruments have magnetic damping, a Permaloy moving vane, and are shielded from stray magnetic fields. On the double and triple-scale instruments a convenient switch on the face makes it possible to change ratings without removing or requiring terminal connections. The case is of Textolite.



Tropic-Aire Introduces Dual Wheel Tire Chains

Tropic-Aire, Inc., Minneapolis, Minn., has introduced a new type of dual wheel tire chain. Cross bars are case hardened drop forgings, and the chain is of heavy steel, case hardened. This new type of chain eliminates the possibility of interference with brakes or springs, and is said to cost less than the ordinary heavy duty dual chains. Cross bars are allowed to creep to prevent injury to tires. Made in two sizes to fit majority of all dual wheel trucks.



R. M. Hollingshead Corp., Camden, N. J., makers of Whiz Products, has a unique sales promotion help in a hand-out Whiz Stop-O-Meter. It is a 4 in. paper disk with a smaller revolving disk which, when turned with the arrow indicating speed in miles per hour, indicates through a hole in the smaller disk the stopping distance in feet. It is used to advertise Whiz hydraulic brake fluid.



GET THE JUMP ON THAT THUMP

A contented customer means sweet profits. Rear-end thumps, rattles, and rumbles are enough to give anyone a grouch. Get the jump on that thump—and get another contented customer—install a Curtiss Spring Saddle Silencer.

Call your jobber right away or write direct.

CURTISS & SMITH MFG. CORP.

POTTSTOWN, PA.

WHAT WILL REMCO SPRING AT THE SHOW?

See for yourself. A welcome awaits you at booths No. T-65-66-67, A.S.I. Show, Navy Pier, Chicago, Dec. 9 to 13th.

MANLEY PRODUCTS CORPORATION

State and Hay Sts., York, Pa.

REMCO

SHOP EQUIPMENT

Hydraulic Presses, Wrecking Crane, Car Washers, Jacks, Trestles, etc.

SYNCHRONIZE FORD V8's



and all other systems on

SHURHIT STROBOSCOPIC ANALYZER

•

Dealer Price $125.00

ask for details

SHURHIT PRODUCTS, INC.

Waukegan, Illinois

Ahlberg Ground Bearings

40%

Saving Over New Bearing Costs

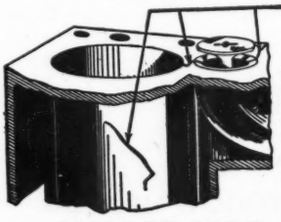
AHLBERG BEARING CO.

Chicago

Branches and Distributors Everywhere

Ahlberg Ground Bearings

A 30 MINUTE WELD IS FAST WORK IN ANY MAN'S TIME



WONDERWELD is the fast worker that seals cracked cylinder walls and valve ports.

MILLER MFG. CO.

1218 KAIGHN AVE. CAMDEN, N. J.

There's Money in Wheel Balancing Service!



Pat. No. 2036757



Many garages are making hundreds of dollars every year by rendering wheel balancing service. Why not you? The cost of an L & H balancing Stand and Balancing Weights is surprisingly small—but the profits they will earn are surprisingly large. Investigate!

HARLEY C. LONEY CO.
16517 Wisconsin, Detroit, Mich.

WRITE for CIRCULAR!

Old and NEW Tires Made Safer!

Once again Kwick-Kut pioneers in grooving equipment with the development of a sensational new blade to cut a narrow strip of rubber 1/16" wide. New tires are made safer and old tires made safe as new—in fact, non-skid if re-grooved with narrow parallel grooves.
This Kwick-Kut blade is the greatest safety development since hydraulic brakes—and you won't have any trouble selling the idea to winter drivers.
Order this blade today—it has every exclusive feature of the Kwick-Kut line.

KWICK-KUT MFG. COMPANY
3854 Arsenal St. St. Louis, Mo.

B·B·B
CARBON PRODUCTS
BRUSHES · METAL-GRAPHITE
SHAPES · WELDING CARBON
The experience of 25 years of carbon engineering available on request.
Becker Brothers Carbon Co.
223-25-27 N. Ashland Ave.
CHICAGO, ILLINOIS

Sell High-Temperature
ARVIN
HOT WATER
CAR HEATERS
For Higher Profits

30 Days to *Prove* it Pays
"SIMPLIFIED" ARC WELDING

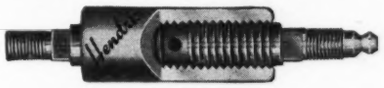


Garages and repair shops the country over are earning from $150 to $300 extra profit each month with this new and modern 40-volt arc welding. Body and fender repairs, cracked motor blocks, frame repairs and hundreds of odd jobs are easily and profitably handled. Simplified control requires no unusual experience. Easy Pay-Out-of-Profit Terms. Write for details.

Send today for Free book
HOBART BROTHERS CO.
Box TA116 Troy, Ohio
HOBART
THE FASTEST SELLING WELDER ON THE MARKET TODAY

Service Spring Co. Offers New Hendrix Shackle

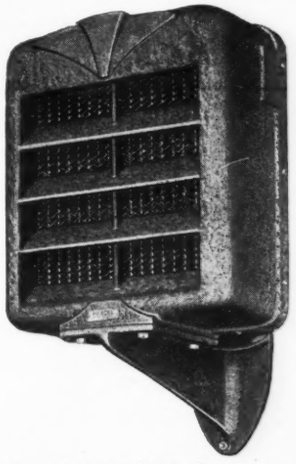
The Service Spring Co., Indianapolis, Ind., has announced a new threaded spring shackle for replacement service on Ford V-8 cars. The new product, known as the Hendrix Shackle Assembly consists of a



threaded bushing of case hardened steel, into which is fitted a corresponding threaded shackle bolt. The screw-type surfaces naturally distribute the strain and friction caused by spring motion over a greater bearing area than is the case with a smooth surface bolt and bushing. The shackle bolt is drilled for lubrication and is equipped with a standard Alemite fitting. Easily installed and requiring only occasional lubrication, it is said to solve the problem of spring squeaks, rattles and groans. List price $.75 per unit. Illustrated and descriptive circulars with distributor and jobber prices will be sent upon request.

Hexcel Electric Unit Heater

The Hexcel Radiator Co., Racine, Wis., has announced a new all-electric unit heater for ceiling or wall installation. This complete heating plant requires no piping, and operates from the electrical circuit. The unit is described as having an all-copper core with cast top and bottom tanks, with electric immersion type heating elements enclosed in the bottom tank which heat a non-freezing liquid. Dual



control provides high heat range or low heat for maintaining moderate temperature.

Racing Champions Named

Frank Bailey, of New Brunswick, N. J., has been named by the Contest Board of the AAA as champion of Eastern States automobile racing competition. Tommy Hinnershitz, of Laureldale, Pa., finished second. Vern Orenduff, Paterson, N. J., is third.

Southeastern States championship, a title created by the Contest Board this year, is awarded to Bob Sall, the Eastern Champ of 1933. Frank Beeder, St. Louis, Mo., is second; "Monk" Tadlock, of Norfolk, Va., third.

YOU
CAN
NOW
TREAT
AND
INSTALL HEAD GASKETS
THE
"FACTORY WAY"
WITH
"PERFECT SEAL"
AS SPECIFIED BY THE PROGRESSIVE CAR MANUFACTURERS "TO BE USED ON ALL HEAD GASKETS OF ALL MAKES TO STOP SEEPAGE"

●

SPECIAL SHOP APPLICATOR
PERMITS FACTORY-LIKE JOB IN ANY SHOP.



YOUR JOBBER WILL SUPPLY YOU QUICKLY.

A PRODUCT OF
P.O.B. MFG. CO., INC.
CINCINNATI, OHIO

YOUR FORD CUSTOMERS
will all want this amazing
HENDRIX
Non-Squeak Shackle!
SCREW-TYPE . . LUBRICATED



End noisy Ford V-8 spring shackles with the new **Hendrix** Screw-Type Shackle. Solves that problem of spring squeaks and groans—*unfailingly*. Hardened steel bolt and bushing give lifetime wear; Alemite fitting for lubrication assures freedom from noise and wear.

CREATES HAPPY DRIVERS!
Install **Hendrix** Shackles for satisfied customers and lasting good will. Tests show this new design outwears the car—never gets loose or squeaky.

WRITE TODAY!
There are good profits for you in meeting the tremendous demand for **Hendrix** Shackles. It's the sensation of the year! Write now for further details and trade discounts!

Big Profits for Jobbers!

Made Only by **SERVICE** SPRING CO., INDIANAPOLIS
MAKERS OF GENUINE SERVICE SPRINGS



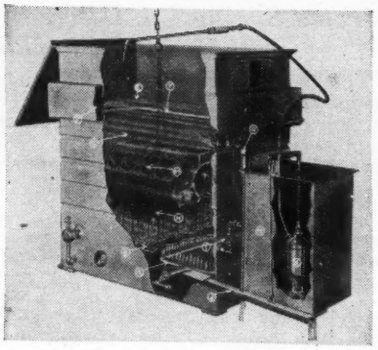
Wiry Joe says—
"There Are **PROFITS** For All *in* **CRESCENT** Automotive Wiring"
Catalog FREE. Address Dept. I
Visit our Booth N-123 at Chicago Show.
CRESCENT CABLE COMPANY
PAWTUCKET, R.I., U.S.A.

Double Your Tire Grooving PROFITS



Only the **New Champion** gives you the exclusive, removable heating element — readily replaced by operator. Champion blades are adjustable for both depth and width. One hand control. Easy to operate. Heats quickly. Works fast. For bigger tire profits, write for free folder.

ALLIED MANUFACTURERS, INC.
406 River St., Ypsilanti, Mich.

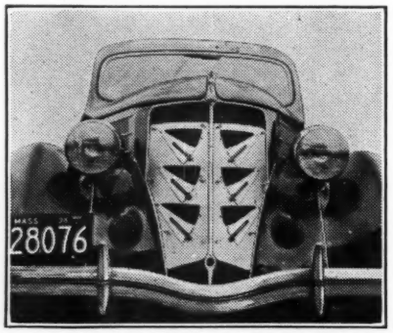


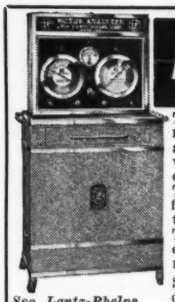
New Rex Degreasing Unit Offered by Circo

Circo Products Co., Cleveland, Ohio, has announced a new model Rex degreasing machine for cleaning all dirty, greasy automobile and bus parts. Perm-A-Clor solvent, which boils at 188 deg. F., is heated in the bottom of the machine. The vapor is forced upward where it condenses on the part suspended in the tank, diluting and dissolving the grease and oil which flows to the bottom of the degreaser. The solvent can be used over and over again by closing the overflow valve and allowing all the distilled solvent to collect in the pump tank. The sludge is removed from the machine by opening the port on the end of the main tank.

Apco Makes All-Metal Radiator Cover

Apco Mossberg Corp., Attleboro, Mass., has announced an all-metal radiator cover, called "Vent-Front," which is provided with six shutters to enable the driver to adjust the cover to meet existing conditions. Purposely designed not to cover the bottom of the grille, to allow proper crankcase ventilation for new cars. Supplied for 1935 and 1936 Ford and Chevrolet models. List price $2.95.





NEW MOTOR ANALYZER
• by Lantz-Phelps •

Tests both combustion and mechanical condition. Enables you to merchandise work orders to car owner quicker than ever before. This L-P Motor Analyzer finds faults in motor operation—proves you fixed them. The outstanding testing equipment of recent development.

Send for catalog pages—full details.

See Lantz-Phelps New Products Exhibit, A.S.I. Show, Chicago, Booth S-114.

THE LANTZ-PHELPS CORP.
945 E. Third St., Dayton, Ohio

ASK FOR LIST OF JOBBERS STOCKING GENUINE
fostoria fenders
WRITE DEPT. J-I
THE FOSTORIA PRESSED STEEL CORP., FOSTORIA, OHIO

HOT SHOT Grease Tool



95¢

Stop the most stubborn spring squeak instantly. Save time and money. Drive pointed end between leaves, attach grease gun and force grease through tool exactly where it's needed.

National MACHINE & TOOL CO.
JACKSON, MICHIGAN

HOOF
DASH - CONTROL GOVERNOR
THE MOST SENSATIONAL SAFETY ACHIEVEMENT OF 1937
Wire, 'Phone, or Write for Details Now.
HOOF PRODUCTS CO.
162 No. Franklin St., Chicago, Illinois

FOR THE OIL GASOLINE & WATER CONNECTIONS
VELLUMOID

A compressible, tough sheet, made to stand the gaff. Be sure you get this Quality Product, not some substitute.
THE VELLUMOID CO., WORCESTER, MASS.

50¢ is the NEW LIST PRICE on the KREGER



No. 204 Brake and Clutch Pedal Extensions for Ford

50% Discount on Initial Order if You Mention Jobber's Name.

L. F. KREGER MFG. CO. CHICAGO, ILL.

THE NEW RIESS DRUM LATHE

You owe it to yourself to get the facts before you buy.

RIESS MANUFACTURING CO.
KOKOMO, INDIANA

A & C COIL TESTER IGNITION

$1.25 each



Lift up the hood and slip an A & C Pocket Coil Tester on the distributor. If the coil is weak, this money making tool brings another new coil customer—you pocket the result in cash. No one ever found a better way to make money in just two minutes.

Ask Your Jobber—If He Does Not Have Them, Write to Us

A & C MANUFACTURING CO., PHILA., PA.

WEIDENHOFF

Don't judge Weidenhoff Engine Tune-up equipment by other units which have been put on the market and sold as "similar to" or "as good as"—There is only one WEIDENHOFF — Originators of Engine Tune-up Equipment and Certified Engine Tune-up.

JOSEPH WEIDENHOFF, Inc.
4350 Roosevelt Road, Chicago, U.S.A.

STEELCRAFT



PISTON RING

Fits tapered and out-of-round cylinders without reboring. Restores compression, stops loss of oil and increases gasoline mileage.

Write for Particulars

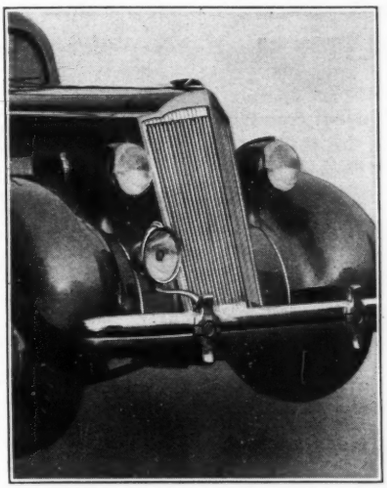
Steelcraft Piston Ring Sales, Inc.
1017 Franklin Street, Detroit, Michigan

HaDees Offers New Line Of Hot Water Heaters

Liberty Foundries Co., Rockford, Ill., makers of HaDees hot water heaters, has announced a new line of heaters consisting of six models. Prices range from $9.95 upward, with prices the lowest in HaDees history, according to the manufacturer. A new window-and-floor display is being supplied, along with dealer helps, store banners, and a sales and service manual. The new HaDees heaters retain previous features, such as an all-copper core, universal mounting, radio-silent rubber-mounted motor and a variable speed indirect-lighted switch.

New Headlight For Fog And High Speed Driving

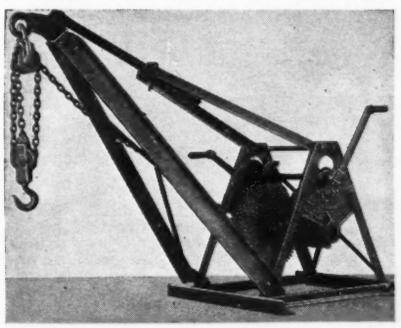
A new headlight for all types of motor vehicles designed to assure maximum road visibility under all kinds of driving conditions is announced by Goodrich Silvertown Stores, retail division of The B. F.



Goodrich Co., Akron, Ohio. The Trippe Safety Speedlight is said to provide improved visibility for driving in fog, rain or sleet.

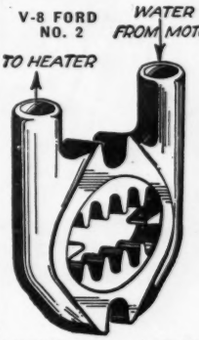
Remco Wrecking Crane New Manley Product

A new 3-ton wrecking crane has been announced by the Manley Products Corp., York, Pa. It contains a lowering brake and an adjustable-length operating handle, both claimed as exclusive Remco features. A pin

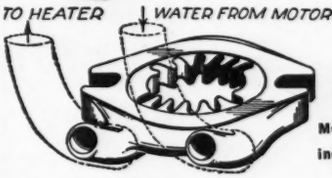


locks the pawl in gear, so that the load can't drop or bounce off in traffic. Ground operating device extra.

NEW HIGH HEAT TORRID-FLO HEATING UNIT FOR HOT WATER HEATERS



Bolts between exhaust manifold and pipe flange like gasket and increases heat 25 to 50 degrees. Waste exhaust gases pass through unit and heats the water in Torrid-Flo channel.



Also volume seller Motorists want increased heat.

NO. 4	Fits	NO. 5
Dodge	32 to 36	Hudson 34-36
Plymouth	33 to 36	Terraplane 32-36
DeSoto	34 to 36	
Lafayette	32 to 36	

NO. 6
Chevrolet Special 29 to 36

Above model with bolts, gasket and hose clamps.

List Price $2.00

NO. 3 UNIVERSAL
Screws into exhaust manifold

List Price $1.75

Liberal Discount to Dealers

EVER-TITE MFG. CO.
DAVENPORT, IOWA

BURTON

Electrical instruments essential to good service are the Hoyt Junior Cell Tester and Starter Current Indicator that tell without connections. Ask your jobber or write us. Burton-Rogers Company, 755 Boylston Street, Boston, Massachusetts.

ROGERS

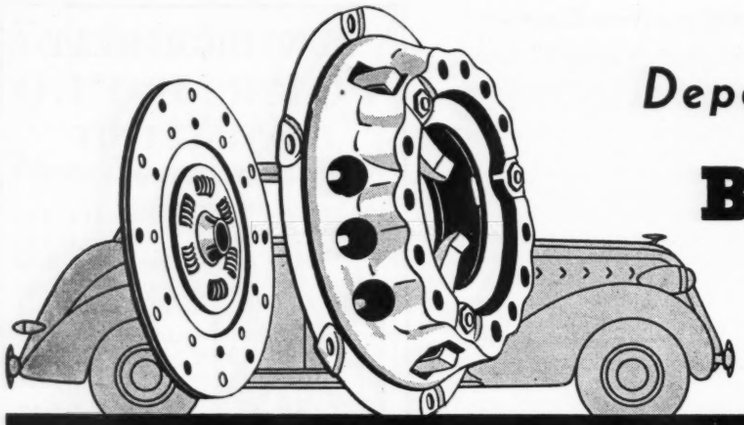
MOTOR DRIVEN HACK SAW



$7.95

The new, portable Pioneer is sturdy, built for hard use. Needed in every shop and garage. Cuts 2" stock. Has 8" saw blade, strong vise, accurately machined gears, firm cast iron frame. Accurate machining insures true cutting. Recommended speed, 125-150 strokes per minute. Motor recommended, ¼ H.P. Shipping wt. 20 lb. Price $7.95 f.o.b. Ann Arbor. Package of 6 blades. 45¢.

DOUBLE-A PRODUCTS CO., INC.
411 N. 5th Ave., Ann Arbor, Mich.



Dependable Performance

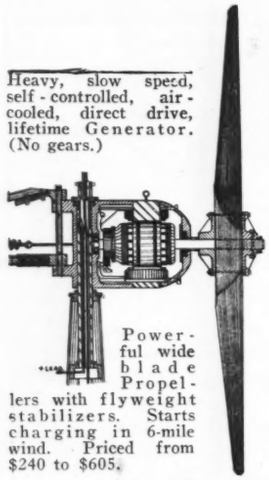
BORG & BECK

CLUTCHES

Products of Experience

DIVISION OF BORG-WARNER CORPORATION

Heavy, slow speed, self-controlled, air-cooled, direct drive, lifetime Generator. (No gears.)



Powerful wide blade Propellers with flyweight stabilizers. Starts charging in 6-mile wind. Priced from $240 to $605.

LIFETIME

FREE ELECTRICITY FROM THE WIND

UNLIMITED SALES POSSIBILITIES!

In every locality there are prospects ready to be sold. Why not reap your share of profits from this ready market with the sturdy Wind-Impeller Plants. Built in 1200 watt to 5000 watt, 32 and 110 volt sizes. Can be installed by windmill men anywhere. *Write for dealer franchise.*

WIND-IMPELLER ELECTRIC WORKS
ELLSWORTH, IOWA

★ A complete line of replacement springs, helper springs, and spring parts for all popular makes of cars and trucks. Built right, engineered right, priced right.

Write for catalog, prices, and complete details—or See Your Jobber

TRAINOR

NATIONAL SPRING COMPANY
New Castle, Indiana

SPRINGEEZ

—The Original ANTI-FREEZE Oil for Motor Cars

Sold by Jobbers Everywhere

HALSTEAD PRODUCTS CO.
2929 Chapman St., Oakland, Calif.

For

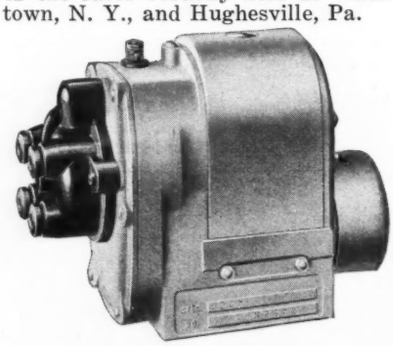
DEPENDABLE QUALITY *and* **SERVICE**

ALWAYS DEMAND LION DEPENDABLE QUALITY GUARANTEED AUTOMOTIVE PRODUCTS

Lion Auto Parts & Mfg. Co., Inc.
1920 So. Michigan Ave.
Chicago, Ill.

"CD" Magneto Used On Racing Cars

The new Edison "CD" magneto recently announced by Edison-Splitdorf Corp. of West Orange, N. J., has fully demonstrated its stamina, power and dependability in racing use on Eastern dirt tracks, according to the manufacturer. It is claimed that the "CD" magneto was used on the winning car of the races recently held at Watertown, N. Y., and Hughesville, Pa.



The Ditzler Color Co., Detroit, Mich., has recently issued a new Repaint Manual which deals with the subject of car painting from the car dealer or independent repair shop angle. It covers shop arrangement, the selection and care of equipment, the fundamentals of painting including spraying synthetic and polychromatic enamels, painting troubles and how to avoid them, and the steps in selling a repaint job. This manual can be secured without charge by writing the Ditzler Color Co., 800 W. Chicago Blvd., Detroit, Mich.



POWER for PROTECTION

BUELL AIR HORNS

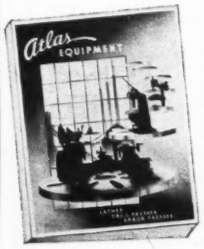
Operate on 200 pounds of air pressure

SOUND RANGE 1 to 10 MILES

Musical in tone—Dependable in emergencies. For passenger cars, buses, trucks, boats.

Write

BUELL MANUFACTURING COMPANY
2989 Cottage Grove Chicago, Illinois



FREE! SEND FOR THIS BOOK

Ten minutes with this big new 52-page catalog will save you many dollars in equipment costs this Fall. Send today for your copy—it's FREE. See all the latest improvements in lathes and drill presses. See the extra features Atlas provides at no extra cost.

ATLAS PRESS CO.
1145 NO. PITCHER ST.
KALAMAZOO, MICH.

ACCURA MICROMETER SET-IN & OUT



Fit Wrist Pins Without a Mike? NO CAN DO

You must have a set of micrometers to do such jobs, if you intend to stay in business. But you don't have to go broke to buy them. Our six-piece set at $11.95 is accurate, finely finished in leather case. Compare! Money-back guarantee. Ask your jobber.

MICRO PRODUCTS CO.
529 E. Jefferson Street, Detroit, Mich.

SIMMONS REPLACEMENT PARTS AND EQUIPMENT

Sold thru leading Jobbers
WRITE FOR CATALOGS

Automotive products of guaranteed quality, including:

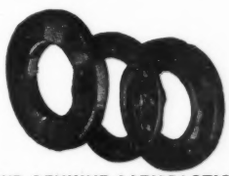
Parts for Ford, Chevrolet, Plymouth

Mufflers, Tailpipes, Carburetors, Brake Drums, Brake Cables, Door Handles

Silver King Hydraulic Jacks

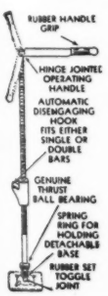
The Simmons Mfg. Co. • Cleveland, O.

A-T-B THRUST BEARINGS



GIVE GENUINE SATISFACTION WITH *PROFIT TO YOU*
Ask Your Jobber
AUTOMOTIVE THRUST BEARING CORP.
2021 So. Michigan Ave., Chicago, Ill.

WOODWORTH JACKS
USE THEM . . . .
SELL THEM . . .



The jack you lift so easy with will be the one your customers want to buy. Woodworth selling features are no back-bending, grunting, groaning. Quality features are ball bearing contruction, fine finish. Send today for description and prices.

WOODWORTH SPECIALTIES CO.
Binghamton N. Y.

Perfect AUTOMOTIVE PRODUCTS

Don't Order Until

You have seen for yourself the splendid possibilities of the BLACKSTONE LINE of PERFECT Automotive Products.

Standard Replacement Parts Speedometer—Carburetor Lighting & Ignition—Fuel Pump.

Quality Replacement Parts at the lowest prices—An unbeatable combination by which we guarantee

You Make More Profits

Write now for Our Complete Catalog.

BLACKSTONE MFG. CO.
1430 S Michigan Ave., Chicago

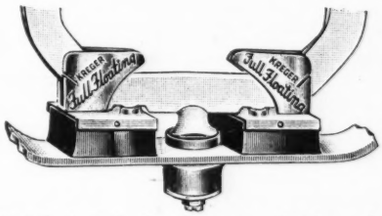
Snow-Plow, Anti-Skid Device Contest to Be Held in Italy

The second international competition for snow-plows will be held in the Italian Alps next February, according to an announcement by the Royal Automobile Club of Italy. At the same time and place, there will be another competition for anti-skid devices to be used on snow or ice, and for vehicles specially equipped for running on snow.

In order to facilitate foreign entries in these contests, custom regulations will be eased and special rates made for railway transportation in Italy.

Front Rubber Motor Support Offered by Kreger

The L. F. Kreger Mfg. Co., Chicago, Ill., has announced their No. 308 Front Rubber Motor Support for



Model A-AA Ford cars. Said to be easily installed, and to be guaranteed for the life of the car, these full floating motor supports carry a list price of $1.

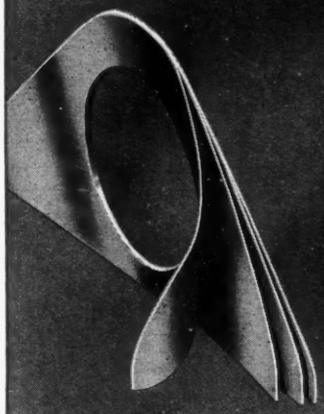
Service Man's Guide In Fourth Edition

The Fourth Edition of the Service Man's Guide to Automotive Lubrication is off the press. The new edition embodies all engineering and service changes made in late model cars as well as the present viewpoint of refiners and grease compounders on the application of their improved products to the modern automobile. A number of new illustrations have been made and all in all the new volume offers complete and up-to-date coverage of correct automobile lubrication.

The book consists of 130 pages, with well over a hundred illustrations. Every unit on the automobile is fully explained and analyzed from the standpoint of its lubrication. While the book is written in non-technical language so that it can be easily understood by anyone, yet it covers every important engineering feature and design. The book is not only of interest to the ordinary reader who is interested in any form of automobile lubrication, but it can be and is used as a textbook of instruction for classes of service station operators.

The Service Man's Guide to Automotive Lubrication has been entirely rewritten by J. Howard Pile, Editorial Director of The Chek-Chart Corporation, 624 South Michigan Avenue, Chicago, for many years technical editor of the *Automobile Trade Journal, Motor World* and other publications. The book is bound in Fabrikoid and priced at $2.00 per copy, with lower prices on larger quantities.

I am your profit in bearing adjustment



I GIVE you .002" adjustment in each lamination! No miking . . . no filing. Just p-e-e-l off .002" or more at a time.

I provide the precision required for modern bearings . . . quickly! I make service adjustments profitable!

LAMINATED SHIM COMPANY, INC.
MFRS.: LONG ISLAND CITY, N. Y.

LAMINUM

FEDERAL-MOGUL CORP.
DISTRIBUTORS: DETROIT, MICH.

Handy BATTERY CHARGERS

LOWER OPERATING COST MEANS MORE PROFIT FOR YOU. No. 12-B Wall type. 12 Battery size. Accurate ammeter. Price, $29.50 without bulb . . . WRITE for Bulletins on complete line of "HANDY" chargers, testers and racks.



BALDOR ELECTRIC CO.
(Electrical Mfrs. for 16 years)
4375 Duncan Ave., St. Louis, Mo.
GUARANTEED for 2 YEARS

ADVERTISERS'

A

A & C Mfg. Co. ... 103
AC Spark Plug Co. ... 6
Acheson Colloids Corporation ... 71
Ahlberg Bearing Company ... 100
Allied Manufacturers, Inc. ... 102
American Chain Co., Inc. ... 57
Armature Co., The ... 108
Asbestos Mfg. Co. ... 79
Atlas Press Co. ... 104
Automotive Thrust Bearing Corp. ... 105
Auto Specialties Mfg. Co. ... 98

B

Baldor Electric Co. ... 105
Bee-Line Mfg. Co. ... 73
Becker Bros. Carbon Company ... 101
Behr-Manning (Div. of Norton Co.) ... 97
Bendix Products Corporation (Subsidiary of Bendix Aviation Corp.) ... 61
Besco Products, Inc. ... 99
Black & Decker Mfg. Co. ... 13
Blackhawk Mfg. Co. ... 93
Blackstone Mfg. Co. ... 105
Borg & Beck Div. of Borg-Warner Corp. ... 104
Buell Manufacturing Company ... 104
Burton-Rogers Co. ... 103

C

C. V. S. Mfg. Co. ... 98
Champion Spark Plug Co. ... 16
Chevrolet Motor Co. ... 11-94-95
Chrysler Corp. ... 90-91
Crescent Cable Co. ... 102
Curtiss & Smith Mfg. Corp. ... 100

D

Double-A Products Co., Inc. ... 103
du Pont de Nemours, E. I., & Co., Inc. ... 89

E

Electric Auto-Lite Co. ... 87
Electric Heat Control Co. ... 97
Electric Storage Battery Company ... 59
Emerol Manufacturing Co., Inc. ... 99
Ethyl Gasoline Corp. ... 69
Ever-Tite Mfg. Co. ... 103
Exide Batteries ... 59

F

Federal-Mogul Corp. ... 105
Ford Motor Co. ... 84-85
Fostoria Pressed Steel Corp. ... 102
Fulton Company ... 96

G

Gardiner Metal Company ... 98
General Electric Co. ... 81
Gulf Refining Company ... 63

H

Hackett Automotive Accessories Corp. ... 98
Halsted Products Co. ... 104
Hein-Werner Motor Parts Corp. ... 80
Hobart Brothers ... 101
Holmes Ernest Co. ... 15
Hoof Products Co. ... 102
Hygrade Products Co. ... 97

I

Imperial Brass Manufacturing Co. ... 96
International Lock & Products Co. ... 86

J

Jaxon Co. ... 98

K

Keasbey & Mattison Co. ... 4
K-D Lamp Co. ... 108

All The Truth

(Figures Based on

MERCHANDISING GROUP

AUTOMOBILE TRADE JOURNAL (Car Dealer)
MOTOR AGE (Maintenance) and MOTOR WORLD WHOLESALE (Wholesale) ... 1160.4 pages
2nd in same field ... 906.4 "
(Total of 2 Publications)
3rd in same field ... 707.6 "
4th in same field ... 540.6 "
5th in same field ... 484.8 "
6th in same field ... 314.9 "

TRUCK and FLEET FIELD

COMMERCIAL CAR JOURNAL ... 591.2 pages
2nd in same field ... 313.7 "
3rd in same field ... 126.0 "

INDUSTRIAL GROUP

AUTOMOTIVE INDUSTRIES ... 762.4 pages
2nd in same field ... 395.4 "

CHILTON PUBLICATIONS

King Quality Products Co. ... 12
Kreger Mfg. Co., L. F. ... 103
Kwick-Kut Mfg. Co. ... 101

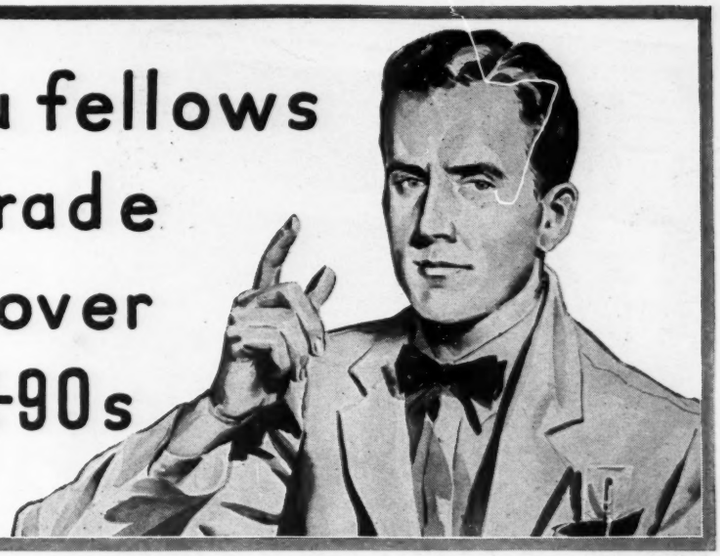
L

Laminated Shim Co., Inc. ... 105
Lantz-Phelps Corp. ... 102
Lincoln Engineering Co. ... 8
Linkert Carburetor Co. ... 99
Lion Auto Parts & Mfg. Co., Inc. ... 104
Loney Co., Harley C. ... 101

M

McCord Radiator & Mfg. Co. ... 5
Manley Products Corp. ... 100
Micro Products Co. ... 105
Miller Mfg. Co. ... 100
Motor Improvements, Inc. ... 98

Now I'll tell you fellows in the repair trade why I've gone over completely to X-90s



4



5

FIRST, I've found that X-90s stop oil pumping even in badly worn cylinders, without resorting to excessive pressures.

SECOND, I've learned that car owners want horsepower, as well as oil economy -- and X-90s give both.

THIRD, I've had more enthusiastic comments from my customers on X-90s than on any other automotive product I ever sold.

Sell 'em HORSEPOWER and OIL ECONOMY, too!

A nation-wide survey among car owners, conducted by that eminent fact-gatherer, Dr. Daniel Starch, tells you clearly what to talk about when selling piston ring installations.

1. OIL ECONOMY 2. RESTORED POWER

And more car owners expressed a preference for Perfect Circles than for the next six brands of rings combined. The Perfect Circle Companies, Hagerstown, Ind., and Toronto.

RECOMMEND X-90 RINGS FOR EVERY JOB—BECAUSE X-90 JOBS STAY SOLD

X-90

INDEPENDENT SPRING ACTION

The Most Resilient Ring Ever Made

X-90 PISTON RINGS



EVEREADY PRESTONE

TRADE MARK

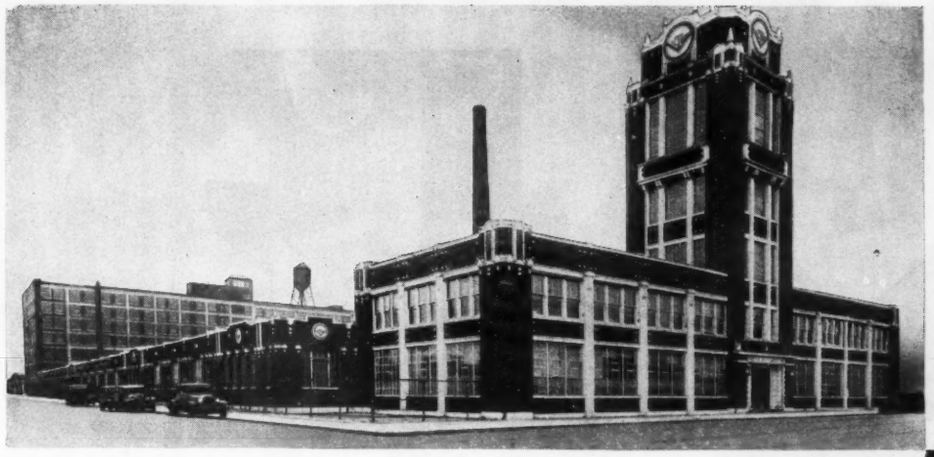
GUARANTEED ANTI-FREEZE

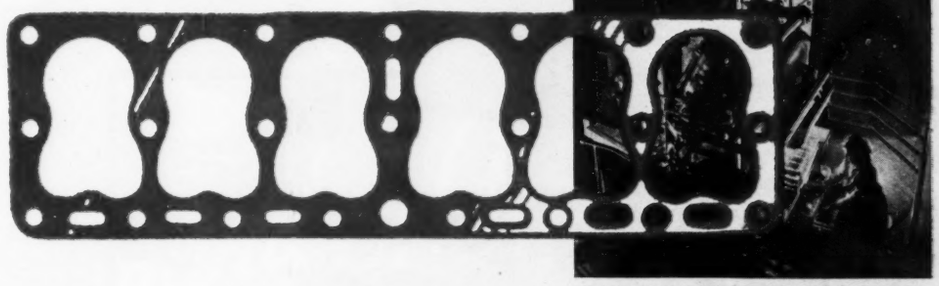
Remember...the early bird gets the bucks from "Eveready Prestone" anti-freeze. Sell your best customers now...they'll appreciate the security they'll have—and it will save you the big rush at the first cold snap.

More people than ever will be buying "Eveready Prestone" anti-freeze early *this* year. Take advantage of this. Get your display material up. Start talking "Eveready Prestone" *now.* It pays real dividends!

The words "Eveready" and "Prestone" are trade marks of National Carbon Co., Inc.

Entered as Second-Class Matter December 27, 1935, at the Post Office at Philadelphia, Pa.; Under the Act of Congress of March 3, 1879. In Case of Non-Delivery Return Postage Guaranteed.





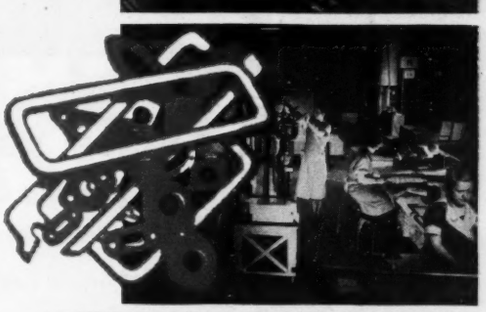
Back of every VICTOR SEALING PRODUCT

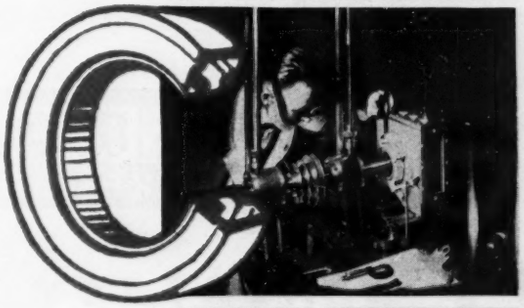
. . . . is an Ideal, to serve and serve well . . . .

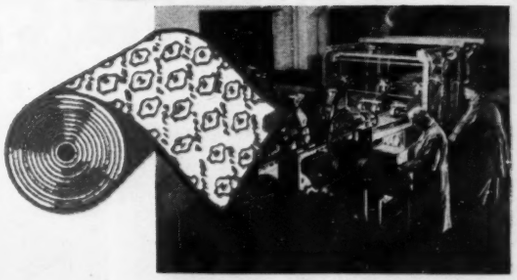
Correct Designs . . . . Right Materials . . . . Careful Workmanship . . . . Dependable Performance . . . . the integrity of these standards, during 28 years of manufacturing, have kept Victor Sealing Products foremost.

The COMPLETE line of Metallic-Asbestos Gaskets . . . . Oil Seals and Grease Retainers . . . . Victorite and Cork Gaskets . . . . Victorite and other sheet packings . . . . Sealaide . . . . Vigasco Cement . . . . from one dependable source simplifies ordering, handling and selling . . . . Convenient packaging . . . . efficient selling aids . . . . accurate and comprehensive cataloging . . . . All have contributed to world-wide Victor prestige.

. . . . Loyalty to the ideal to build Victor Sealing Products finer and finer gives Victor customers an extra bonus of satisfaction.



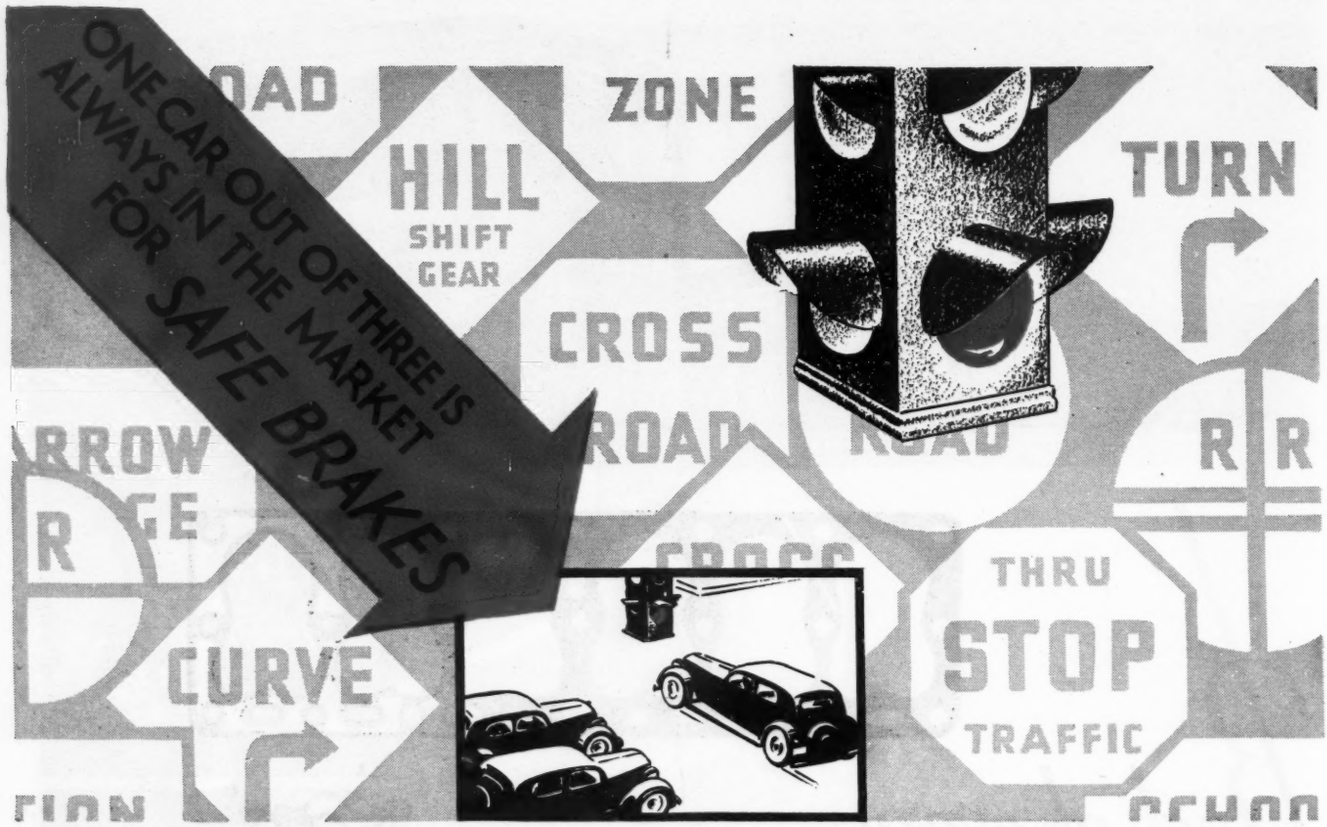




Victor Manufacturing & Gasket Co.
P. O. Box 1333 5750 Roosevelt Road Chicago, U.S.A.



Published monthly by Chilton Co., Chestnut & 56th Sts., Phila. Subscription price:- United States, Mexico, United States Possessions, and all countries in the Postal Union, $2.00 per year. Canadian and foreign, $3.00 per year; single copies, 25 cents.

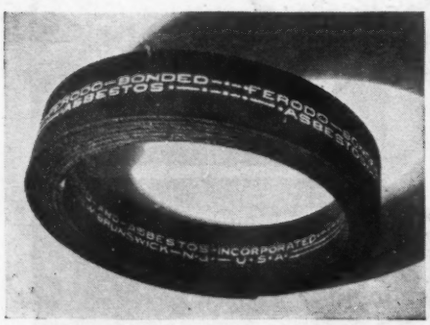


TURN DANGER SIGNS INTO DOLLAR SIGNS . . . Every danger sign on a wet fall road is selling SAFETY for you. Drivers realize more than ever that "good enough" brakes aren't safe. Are you cashing in on this new caution created by safety campaigns? Are your sales of Ferodo Brake Linings going up . . . steadily up? Remember: you're selling SAFETY, and these are the year's dangerous months!

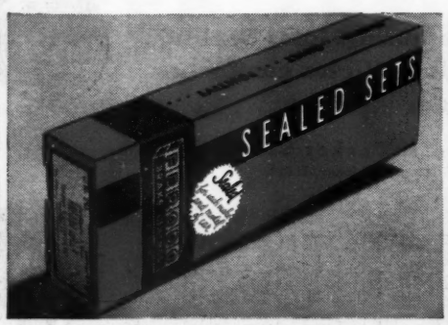
FERODO
BRAKE LININGS

Write, wire, or phone your wholesaler or get in touch with us TODAY. Every day you miss is a sale you miss.

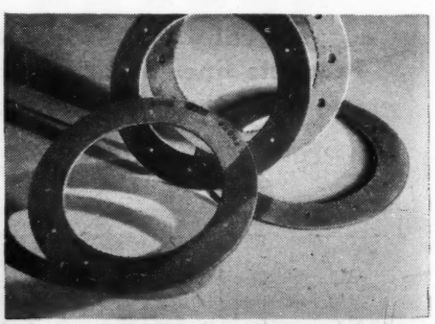
KEASBEY & MATTISON COMPANY, AMBLER, PENNA. SOLE DISTRIBUTORS IN THE U. S. A. FOR FERODO BRAKE LININGS



FERODO–BONDED



SEALED SETS



CLUTCH FACINGS

RADIATORS · GASKETS

McCORD

The Standard of Quality

in REPLACEMENT PRODUCTS

Quality in McCord products is tangible in the fine appearance of the product, the outward evidence of careful workmanship and in the attractive package that protects the product to the point of use. There is a further intangible quality that McCord's 32 years of engineering and manufacturing experience have built into products bearing the McCord name. That's why the McCord name has universal acceptance—why mechanics recognize a product bearing the McCord name as one that can be depended upon in service.

McCORD RADIATOR & MFG. CO. DETROIT

RADIATORS · OIL SEALS

CAR HEATERS · GASKETS



SALES!

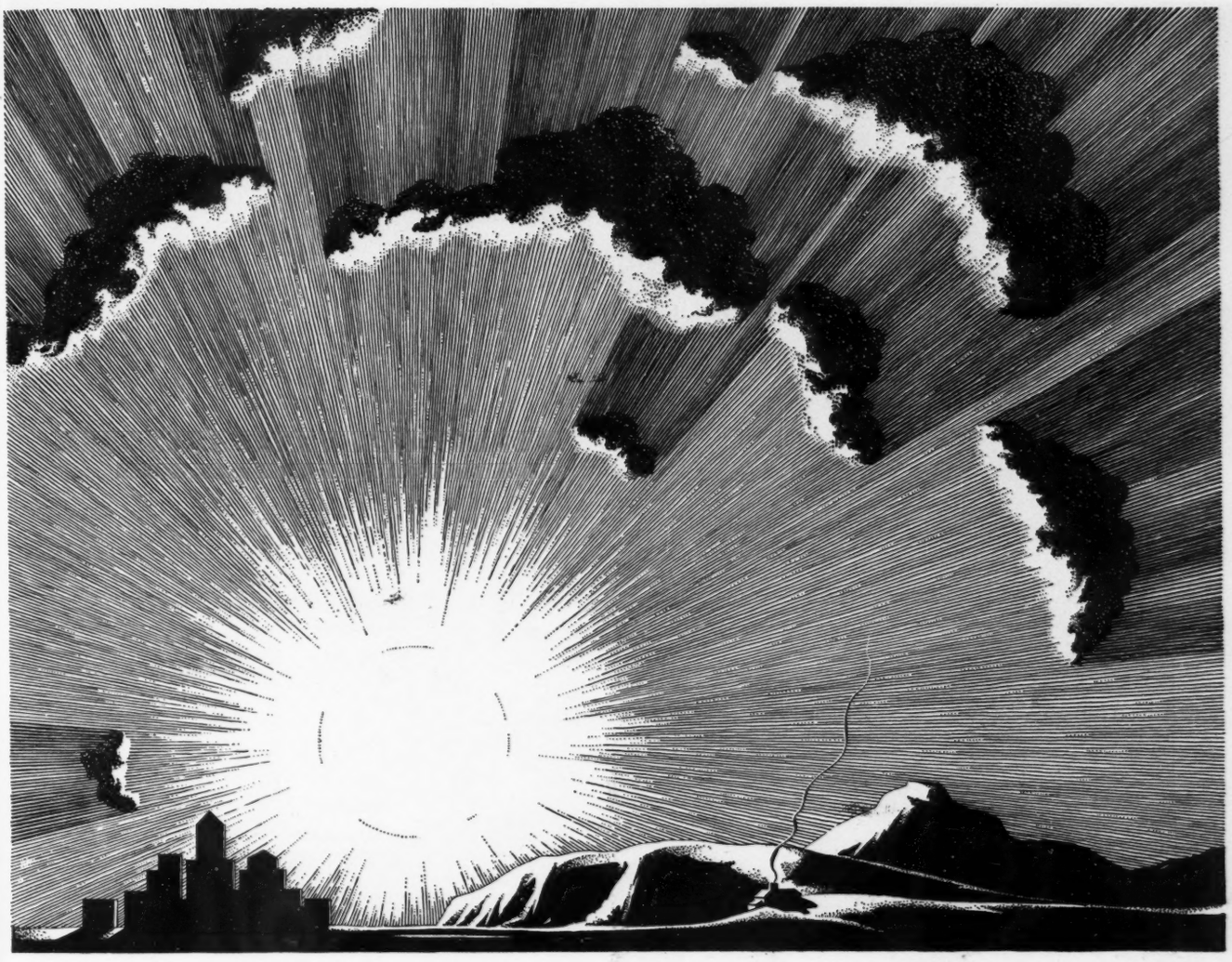
Retailers who have tied in with AC by displaying the Registered Cleaning Station Sign and other merchandising pieces have enjoyed a big increase in their spark plug volume, while AC sales have broken *all records for three straight years!* SALES in 1934 were far above 1933 . . . SALES in 1935 passed 1934 . . . and SALES this year are far ahead of 1935!

AC SPARK PLUG *Division of General Motors Corporation*
FLINT, MICHIGAN

Flint, Michigan — St. Catharines, Ontario

It Pays to Register With AC

SEE YOUR AC WHOLESALER'S SALESMAN TODAY



1937 PERFORMANCE FOR 1935 BRAKES

A five-million car year is dawning. The industry has builded for higher speeds with fewer accidents, for greater traffic with less congestion. In this new-car building, Grey-Rock and its corporation have played the important role of providing quicker and better friction materials for new and better braking mechanisms.

Grey-Rock congratulates car makers and buyers in 1937.

A busy year for service men is dawning. Cars will travel faster and stop quicker, in greater numbers. Drivers will face the competition of the finer brakes and better linings of 1937 cars. And Grey-Rock, bringing to the replacement field all the knowledge gained in planning for 1937 models, already encloses in Grey-Rock Balanced Brakset boxes the materials, formulas, instructions—in fact the performance—of 1937 brakes for older cars.

Grey-Rock congratulates its own dealers on their prospects for 1937.

Grey-Rock

BALANCED BRAKSETS



UNITED STATES ASBESTOS DIVISION *of Raybestos-Manhattan, Inc.*, **MANHEIM, PA.**



LINCOLN Business Building LUBRICATION EQUIPMENT *has*

Exceptional Eye Appeal

The outstanding beauty of design and unusually attractive finish of Lincoln Lubrication Equipment win instant and favorable attention.

Each unit in this complete line is gracefully proportioned and artistically finished to possess the highest eye appeal.

In addition to this great point-of-sale value, the superiority of Lincoln equipment for producing clean, fast, economical service assures customer satisfaction.

An amazingly small investment will buy a very attractive, profit-producing Lincoln set-up. Units can be purchased in a wide choice of combinations. Business Builder No. LE-11 (illustrated above) makes an ideal small department capable of handling a considerable volume of lubrication service. This group includes a Lincoln Gear Lubricant Dispenser, 2 Filler Pumps, a Drainmobile and Service Board with 2 air-operated and 6 hand operated guns.

For complete information on this group, as well as on larger combinations, ask your nearest Lincoln jobber or write us for Bulletin No. 125-H.

•

LINCOLN ENGINEERING COMPANY

General Offices: St. Louis, Mo.
Factories: St. Louis, Mo. and Detroit, Mich.

LINCOLN
LUBRICATION EQUIPMENT

WHY TRUST TO LUCK WHEN YOU CAN BE SURE?

Repower with SEALED POWER

STA-TITE PISTON RINGS *and* PISTON EXPANDERS

Proved in Millions of Cars and Trucks



Luck plays no part in a repowering job. The rings and expanders you use must be technically right. And you've got to install them correctly. Result: a good job, a satisfied customer, and no costly comeback.

You don't leave anything to luck when you repower with Sealed Power. For Sealed Power "Sta-tite" Rings and Piston Expanders have proved their merit, their technical perfection and their efficiency for many years in many millions of cars. Millions of installations without a costly comeback have made them the favorites of America's Ace Mechanics!

That's why repairmen everywhere are learning it's wise to choose and use Sealed Power Rings instead of vigorously promoted rings still in the experimental stage. Such rings require too much dependence on luck. The gamble is entirely too great.

SEALED POWER CORPORATION
Muskegon Michigan

WESTERN UNION
LOS ANGELES, OCT. 18, 1936

SEALED POWER CORP.
CONGRATULATIONS! SEALED POWER PRODUCTS PLAYED IMPORTANT PART IN PERFORMANCE OF TERRAPLANE AND HUDSON 1937 CARS THAT JUST BROKE FORTY OFFICIAL STOCK CAR RECORDS ON THE BONNEVILLE SALT FLATS UTAH. AFTER THESE RECORDS WERE SET ENGINE PERFORMANCE WAS JUST AS GOOD AS AT THE BEGINNING OF THE RUNS.
ED SCHIPPER, HUDSON MOTOR

SEALED POWER

STA-TITE PISTON RINGS with SEALED POWER PISTON EXPANDERS • The Ideal Installation



● You'll like this new Walker Junior Roll-A-Car . . . No. 774. It combines the ease and speed of hydraulic lifting with compact ruggedness that assures dependable service. And the price is the lowest for which a genuine Walker Hydraulic Roll-A-Car ever sold.

The high raise puts a car up where it's easy to work on. The long handle and low frame provide reach and clearance for any lifting point under car. No. 774 Walker hydraulic junior is a "natural" for modern light car service . . . with built-in over-capacity strength for heavier work, if required. Modernize your lifting equipment with No. 774 and other Roll-A-Cars in the complete Walker line.

Prices: Mechanical Roll-A-Car No. 743, 2 tons, $30.00; No. 745, 2½ tons, $37.50; Hydraulic Roll-A-Car, No. 785, 3¾ tons, $55.00. All prices slightly higher west of Denver and in Canada. Order from your jobber.

WALKER MANUFACTURING CO., RACINE, WIS.

Makers also of Walker Electric Lifts and Walker Exhaust Silencers

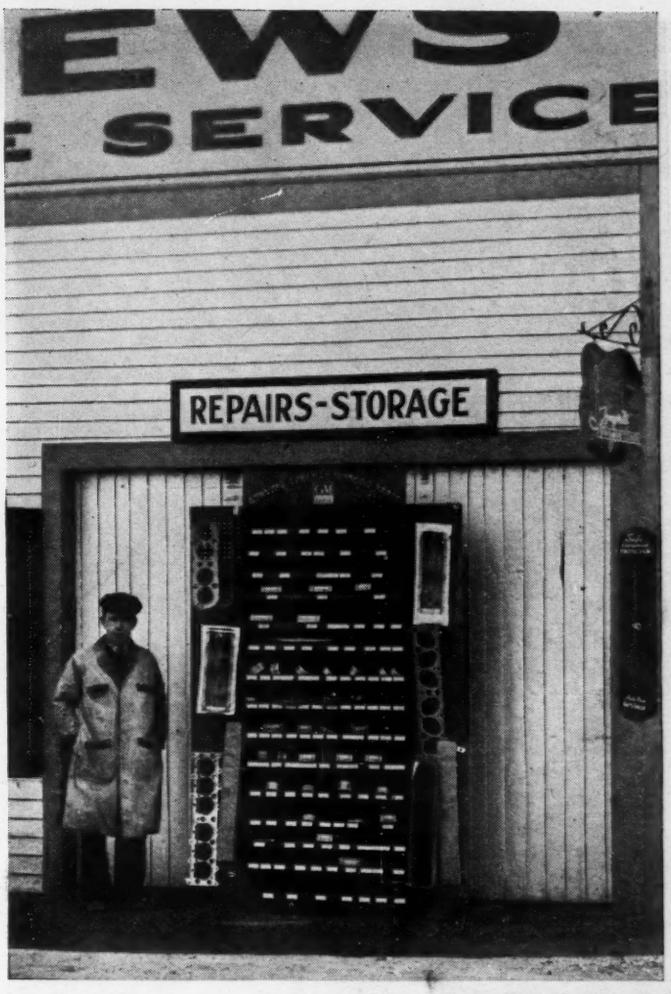
OBSOLETE LIFTING EQUIPMENT
ROBS YOU OF PROFITS
MODERNIZE WITH

WALKER JACKS

"Makes a Hit with Our Customers"

Says Perley C. Andrews

INDEPENDENT GARAGEMAN

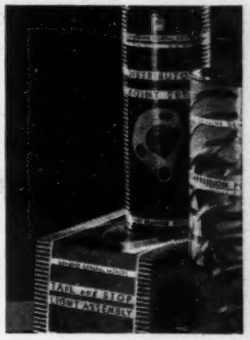


Andrews Automotive Service, Searsport, Me., is one of thousands of successful Independent Garages that have adopted the Chevrolet plan and installed a Genuine Chevrolet Parts Bin completely stocked with fast-moving parts.

"There are a great number of Chevrolets, both passenger cars and trucks, in our community . . . one of the best markets for our service, maintenance and parts," writes Perley C. Andrews.

"It is for this reason that we like the assortment of fast-moving parts contained in the (Chevrolet) parts bin. It fills in the third link of complete service. This is why we believe ourselves to be just a jump ahead of our competitors, because we have the right part at the right time, which makes a hit with our customers because they want Genuine Chevrolet Parts. It also saves our customers time and ourselves the expense of traveling several miles for a few parts."

CHEVROLET MOTOR COMPANY, DETROIT, MICHIGAN



The large, all-steel parts bin and genuine GM packaged parts (illustrated) are only a part of the Chevrolet plan that has been so successfully used by Independent Garagemen everywhere. Send today for full information that will show why this is a real opportunity to increase your service volume and profits!

INDEPENDENT GARAGEMEN! *Join the thousands of service station owners who have adopted* **THE CHEVROLET PLAN!** *Write for details of how you can secure the Chevrolet Display-Type Parts Bin* ***COMPLETELY STOCKED WITH*** **450** ***Fast Moving*** **GENUINE CHEVROLET PARTS**

MAIL *this coupon* **TODAY**

FOR FULL DETAILS OF THE CHEVROLET PLAN INCLUDING THE AMAZINGLY LOW COST OF THE PARTS BIN

CHEVROLET MOTOR COMPANY
Parts Merchandising Dept. B-11
General Motors Building, Detroit, Michigan

Gentlemen:

Please supply me at once, without obligation, the complete details of the new Genuine Chevrolet Parts Plan for Independent Garages.

*Name*_____

*Street Address*_____

*City*_____ *State*_____

Super-X – Outstanding because it leads in performance

TRADE MARK REGISTERED



Even lower prices in combination sets for the more popular cars

When Super-X was announced several months ago, spring-expander ring users gasped at its many exclusive performance features. • • • • Today the spring-expander ring field acknowledges a new leader.

WHEN YOU ORDER NEXT—*Remember* Super-X

When the motor test says—

"Valve Job Needed"

the Black & Decker Valve Shop

Clinches the Sale!



YOUR tests of the motor convince the customer that his valves need reconditioning. And right there is the spot to turn to your Black & Decker Electric Valve Shop and prove to the customer that you're all set to give factory accurate valve work—*with the best valve job equipment in town*. That clinches the sale.

Then the Valve Shop rolls right up to the car with all the latest equipment for turning out better valve work, in less time, at a better profit. The Valve Shop regrinds any type valve seat (cast iron, steel, Stellite) by the high-speed, accurate Vibro-Centric Method. Refaces valves right at the car. Contains a set of carbon-cleaning tools. And has plenty of storage space and electric outlets for other tools and equipment you may need on the job.

Go after valve work in a big way—a profitable way—with the new Black & Decker Electric Valve Shop. Put it to work for you—alongside your motor analyzer—now. Ask your jobber—or write for details. The Black & Decker Mfg. Co., 727 Pennsylvania Avenue, Towson, Md.

The Best Equipped Shop gets the Business

NEW EASY PAYMENT PLAN

You can put the Black & Decker Electric Valve Shop to work for you now and pay for it under the new authorized time payment plan of the Automotive Equipment Industry. Ask your Jobber for details.

BLACK & DECKER

World's Largest Manufacturer of

PORTABLE ELECTRIC TOOLS



WHO OWES WHO?

WHO owes more to the other . . . American-Bosch or the repair man? Does the repair man owe more to American-Bosch . . . who was first to introduce the universal coil . . . who today provides a complete line of better coils, prices them fairly to give greater value to the car owner and greater profits to the dealer . . . and who has simplified coil selling with the revolutionary American-Bosch Coil Kit.

Or does American-Bosch owe more to repair men who, appreciative of higher quality and higher profits, have made American-Bosch the largest independent coil manufacturer in the world.

We believe the honors are divided . . . an equal partnership between manufacturer and dealer that has proved highly beneficial and profitable to both.

UNITED AMERICAN BOSCH CORPORATION
SPRINGFIELD, MASS. New York Chicago Detroit

AMERICAN-BOSCH *Electro-Balanced* COILS



Presenting the New G-E TUNGAR D-c ARC WELDER

WELD IN YOUR OWN SHOP . . . AND MAKE MORE MONEY

With this new Tungar D-c Arc Welder, every garage can do its own welding. Repair work and fabrication of parts are quickly completed. In addition, other welding jobs will come to you. And that means more business . . . and more profits.

Every feature of the Tungar D-c Arc Welder is designed for economical operation . . . and large profit per job. The first cost is low. Since there are no moving parts, maintenance is kept to a minimum. Transformers and new Tungar Welding Bulbs are built to withstand severest operating conditions.

The Tungar D-c Arc Welder is easy to operate. Anyone accustomed to other types finds that the Tungar is simpler and more dependable. It makes better welds. The arc is peppy . . . stable . . . easy to hold. Switch handle with indicating dial makes current selection easy.

You can operate the Tungar D-c Arc Welder anywhere . . . on chassis or inside car . . . without always removing parts. There is no finer welder available for garage work . . . for welding ¼-inch plate to lightest-gauge sheet metal. Get full details. Mail coupon today.

Section A-7211, Appliance and Merchandise Department,
General Electric Company, Bridgeport, Connecticut.
Rush me full details on the new Tungar D-c Arc Welder.

Name.....

City.....

Address.....

GENERAL ELECTRIC

AUTOMOTIVE PRODUCTS

APPLIANCE AND MERCHANDISE DEPARTMENT, GENERAL ELECTRIC COMPANY, BRIDGEPORT, CONN.



for HEAVY DUTY...

DEVELOPED AND PERFECTED in the Engineering Laboratories of Thompson Products, Inc.

INTRODUCED to the automotive maintenance trades NINETEEN MONTHS AGO.

SOLD by Thompson Products jobbers everywhere.

Latest **AIRCRAFT DESIGN** for severe service in trucks, busses, tractors and passenger cars.

THOMPSON PRODUCTS, INC.
CLEVELAND • DETROIT

Thompson *Aero Type* Valves

NEWTYPE

IGNITION CABLE INSULATION



IS THE SAME INSULATION THAT IS USED ON CABLES THAT CARRY THE POWER OF THE LARGEST PUBLIC UTILITIES, RAILROADS, BATTLESHIPS AND GIANT INDUSTRIALS OF THE NATION

NEWTYPE is the automotive division of the Okonite Company, leaders of the insulated cable industry for nearly 60 years. Okonite cables are well known to the electrical industry as the finest cables for dependability and long, useful life. This same fine insulation is used on Newtype Automotive Wires and Cables. Sell it with the knowledge that no other manufacturer makes a product with such a long and trustworthy record.

THE OKONITE COMPANY
NEWTYPE AUTOMOTIVE DIVISION
PASSAIC, NEW JERSEY
"Founded 1878 — over a half century of service"

NOKRODE BATTERY CABLE UNITS
IGNITION SETS · IGNITION CABLE MERCHANDISING
SPOOLED WIRE · OILPROOF CORD · TERMINALS
CELLOPHANE WRAPPED FRICTION TAPE

IT'S HERE! A NEW

Genuine FORD



FORD PROFIT MAKER!

ANTI-FREEZE

Economical • Dependable • Profitable
Here is your Opportunity to Cash in

Want to make more money this winter? Here's how you can. Sell Genuine Ford Anti-Freeze. It's new. It's better. It's economical. It's profitable. It's the Anti-Freeze millions of Ford owners have been looking for. Many of them are right in your neighborhood.

With Genuine Ford Anti-Freeze you can offer your customers two-way protection for their cars. It protects against freezing, it protects against rust and corrosion. You can offer them an Anti-Freeze that is safe, dependable, thoroughly tested and approved in the Ford Laboratories at Dearborn, Michigan. You can offer them an economical Anti-Freeze. It lists at 25c per quart. And it costs less to use because it evaporates less.

Genuine Ford Anti-Freeze is made for use in all cars and trucks. Millions of motorists will know it as a quality product because it bears the name "Ford." Order a supply today. It's easy and convenient to handle—either in quart or gallon sealed containers, in 5-gallon cans or in 54-gallon drums for bulk sales. Let the name "FORD" bring more customers—and more profits—into your shop.

GENUINE Ford PARTS

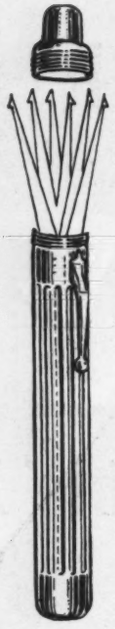
FORD MOTOR CO., Dearborn, Michigan

BECAUSE OF THESE FEATURES YOUR CUSTOMERS WILL WANT GENUINE FORD ANTI-FREEZE

- POSITIVE PROTECTION
- PREVENTS RUST AND CORROSION
- LESS EVAPORATION
- NO OBJECTIONABLE ODOR
- ECONOMICAL
- FORD QUALITY

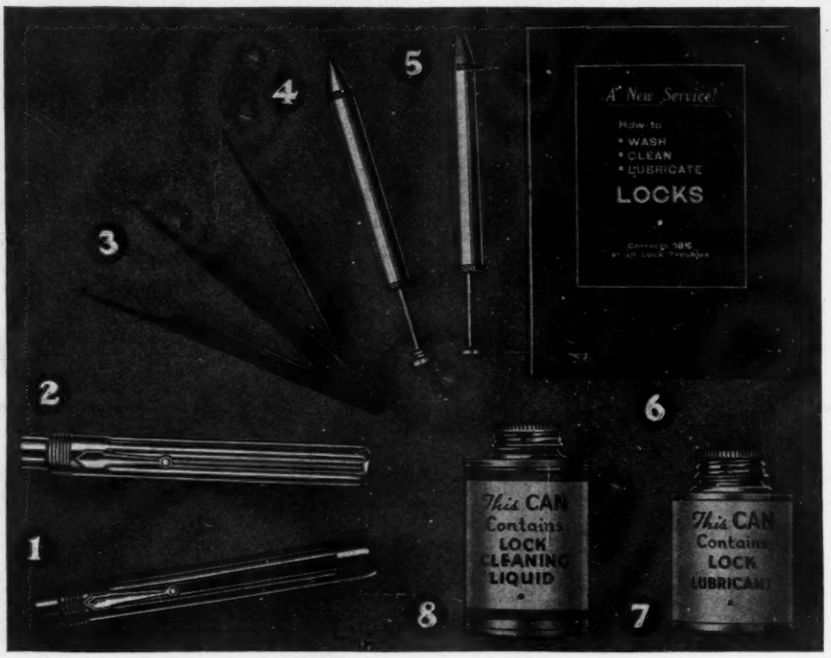
TWO-WAY PROTECTION FOR ALL CARS AND TRUCKS

1 Protects against Freezing 2 Protects against Rust and Corrosion



BROKEN KEY EXTRACTORS

No special skill required to remove broken keys quickly, without damage to lock or car. Six of the same tools in a vest-pocket case ready for instant use, with complete, simple and easily-understood instructions. **$1.00.** This is a distinct new service *separate and apart from key service.*



No Freezing Locks—No Tight Locks—No Breaking Keys

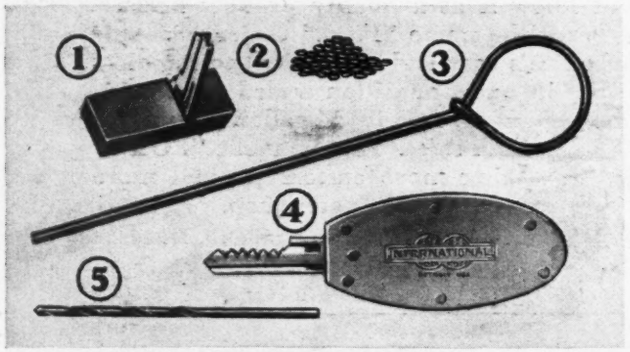


LOCK PICKS

A compact, effective set of Lock Picks for use by the dealer, garage or service station. Opens any lock. A 16-page booklet entitled "How To Open Automotive Locks" comes free with each set of Picks. Don't break locks or windows. A tremendous immediate available market. Order through all jobbers or from International Lock and Products Company Inc. **$2.50.** Available to those established in business.

LOCK CONDITIONING

A new profitable service — A potential cold weather line. Not an experiment. **$3.50.**



LOW PRICE KEY CUTTING OUTFIT

Tried and proven, factory-approved and recommended. A complete key cutting outfit ready to make keys by number. Each outfit complete with 1, Key Cutter; 2, Codes; 3, File Cutter; 4, Assortment of Key Blanks; 5, Instructions.

Part Number C-34. Price **$5.00.** For Chrysler, Dodge, Plymouth and DeSoto. Provides 1933 and 1934 complete service. Part Number C-5. Price **$5.00.** For Chrysler, Dodge, Plymouth and DeSoto. Provides 1935, 1936 and 1937 complete service, including 1937 Studebaker. Part Number 543. Price **$5.00.** For Ford, Lincoln Zephyr and Lincoln, using Hurd Locks. Provides complete service 1932, 1933, 1934, 1935, 1936, 1937. Part Number GM-345. Price **$7.50.** Complete service for all General Motors cars, all years up to and including 1937, and including all types of Briggs and Stratton Locks, 5-tumbler, 6-tumbler, and double bit.

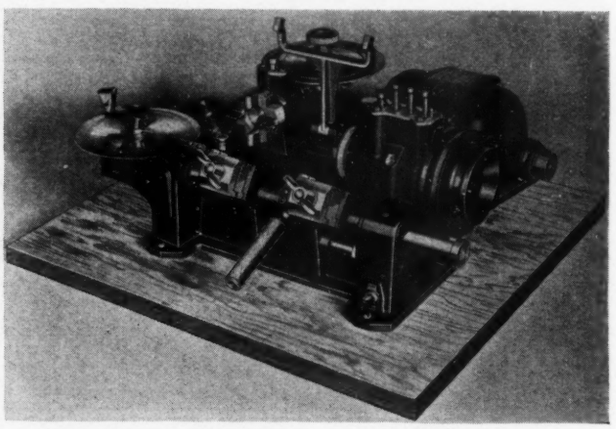
LOCK OPENER

Without ruining lock or trim, or breaking glass, you can now open all locks used on all General Motors cars for the years 1935, 1936, and 1937, by use of this practical Drill Jig Outfit. The manufacturer recommends drilling out the lock and throwing it away. This precision tool drills the lock without ruining lock or trim. Three consecutive years' use of this type of lock on all General Motors cars opens up a veritable gold mine of prospects. A car thief operates on the element of time, and no car thief will attempt to drill a lock. Sold only to those actually engaged in business. Remember, this tool preserves the lock and does not ruin it. **$2.00.**



CHECK YOUR KEYS

Code Indicator. A convenient tool for those supplying key service. Instantly checks keys for accuracy after cutting, measures and decodes broken keys, measures and decodes keys which do not have a number, permitting the supply of a key as a duplicate or cut from code. Now **$3.00.** Complete for servicing up to and including 1937.

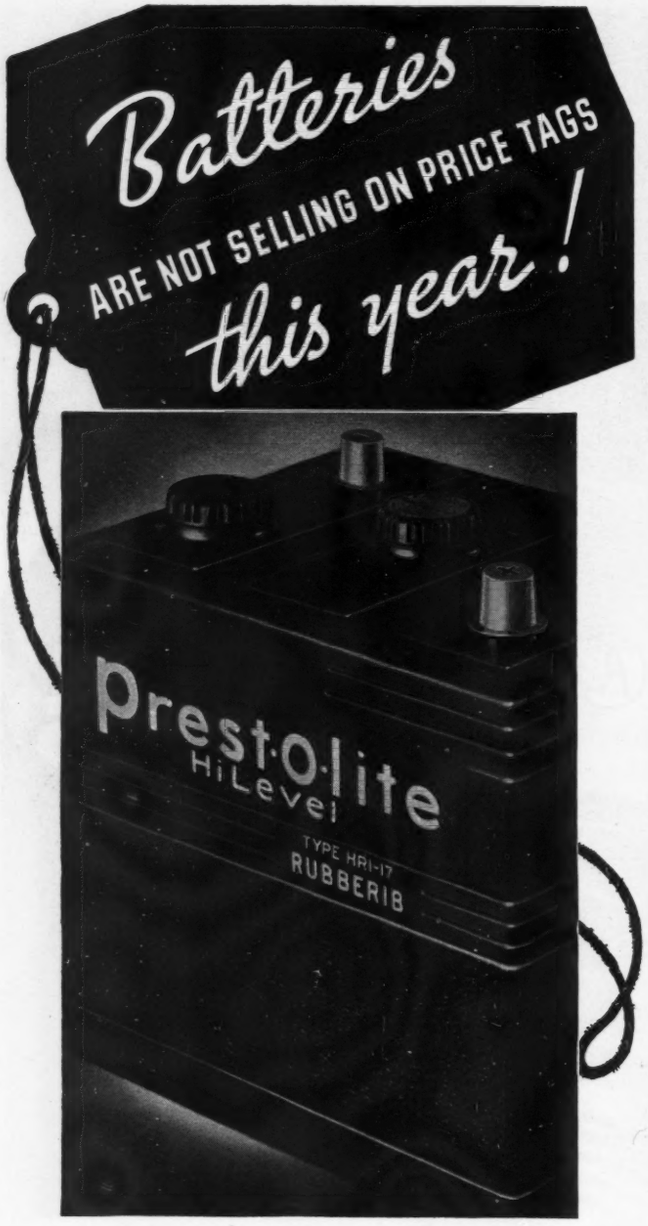


UNI-MATIC PUSH BUTTON KEY CUTTING MACHINE

An amazing *new type* power-driven key machine, model PK9. The first and only power-driven key machine that requires *no change of parts or cutter,* and *nothing to buy* from year to year to keep it up to date. Our machine is *always* up to date. You can now with safety apportion your key machine investment. Fully universal and self-contained. Factory-approved and recommended. **$59.50.** A better key cutting machine at a lower price. Supplied complete with 110 V-AC Motor, including Code Book and Tools, etc. An amazing market immediately available. Write for complete details.

International Lock & Products Co., 737 Beaubien St., Detroit, Mich.


Ignition Engineered
BY IGNITION ENGINEERS
AUTO LITE
SPARK PLUGS
● Yesterday, Spark Plugs were sold as an accessory. Today Auto-Lite engineers, after years of research, have developed the Auto-Lite Spark Plug as a component part of the ignition system. Its performance factors have been chosen for absolute balance with all other units of the ignition system.
● The Auto-Lite Spark Plug is "Ignition Engineered by Ignition Engineers."
● You ought to know the story of the Auto-Lite Spark Plug. Why don't you write us for all the facts—the greatest spark plug story ever told. Use the coupon. The Electric Auto-Lite Company . . . Merchandising Division, Toledo.
Merchandising Division,
The Electric Auto-Lite Company,
Toledo, Ohio
Gentlemen:
I want all the facts concerning the Auto-Lite Spark Plug.
I am a (check proper space or attach to your letterhead).
Car Dealer ☐ Garage ☐ Service Station ☐ Jobber ☐
Name
Firm Name
City or Town
State
MAil



PREST-O-LITE'S COMPLETE LINE

—with planned price spreads and graded features—is this year's opportunity for you to sell batteries at a profit.

● With a wide range of battery types and prices—you can sell your prospects a Prest-O-Lite at almost any price they want to pay—yet with the Prest-O-Lite leader—the New HiLevel—you have a real opportunity to step up sales into higher profit brackets.

The HiLevel is not like any battery you've ever sold. Built on an entirely new principle—under normal driving conditions it requires watering *only 3 times a year*. Risk of battery failure is reduced 75%. And that's something to talk about.

This year—car owners want better products—they can be *sold* better products. Increase your profit-per-sale with Prest-O-Lite.

PREST-O-LITE BATTERY COMPANY, INC.
Oakland, Calif. • INDIANAPOLIS, INDIANA • *Toronto, Canada*

Prest-O-Lite

A BATTERY FOR EVERY CAR . . . EVERY PURSE

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933

Of MOTOR AGE, published monthly at Philadelphia, Pa., for October 1, 1936.

State of Pennsylvania } ss.
County of Philadelphia }

Before me, a notary public in and for the State and county aforesaid, personally appeared J. S. Hildreth, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the Motor Age and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are: Publisher, Chilton Company, Chestnut & 56th Sts., Phila., Pa.; Editor, W. K. Toboldt, 221 S. Walnut St., West Chester, Pa.; Managing Editor, F. P. Tighe, 119 Wilson Ave., Manoa, Pa.; Business Manager, J. S. Hildreth, 429 Owen Road, Ardmore, Pa.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) Chilton Company, Chestnut & 56th Sts., Phila., Pa.

Holders of more than 1% of the capital stock outstanding of Chilton Company: C. A. Musselman, 260 Sycamore Avenue, Merion Station, Pa.; F. J. Frank, Laontaka Way, Madison, N. J.; F. C. Stevens, 325 West End Avenue, New York, N. Y.; J. S. Hildreth, 429 Owen Road, Ardmore, Pa.; G. H. Griffiths, 165 Montclair Avenue, Montclair, N. J.; E. B. Terhune, Hotel Lincoln, New York, N. Y.; John Blair Moffett, 1608 Walnut Street, Philadelphia, Pa.; Wm. A. Barber, 185 Summit Lane, Bala-Cynwyd, Pa.; C. S. Baur, 76-66 Austin Street, Forest Hills, N. Y.; J. H. Van Deventer, 12 Phillipse Place, Yonkers, N. Y.; Dorothy S. Johnson, 3109 Woodley Road, Washington, D. C.; Lillie Lindsay, 142 East 71st Street, New York, N. Y.; Anne E. Tomlinson, Bankers Trust Company, Fifth Avenue & 44th Street, New York, N. Y.; Ethel G. Breen, Trustee u/w of Charles W. Anderson, 71 West 35th Street, New York, N. Y.—Beneficiaries: Robert C. Anderson, Percival E. Anderson, Charles W. Anderson, Jr., Annie L. Clark; John Blair Moffett, 1608 Walnut Street, Philadelphia, Pa.—Agent for J. Howard Pew, J. N. Pew, Jr., Mabel P. Myrin, Mary Ethel Pew; Elizabeth J. Artman & Elwood B. Chapman, Executors of Estate of James Artman, Deceased, 930 Real Estate Trust Building, Philadelphia, Pa.—Beneficiaries: Franklin Artman, Vera Watters, Alvin Artman, Elizabeth J. Artman, Marion A. Pratt, George W. Pratt, by assignment, Edwin Moll, by assignment; G. Eugene Sly, Deceased, c/o Bankers Trust Company, 16 Wall Street, New York, N. Y.—Beneficiaries: Mrs. Beulah Belle Sly, Frederick S. Sly.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

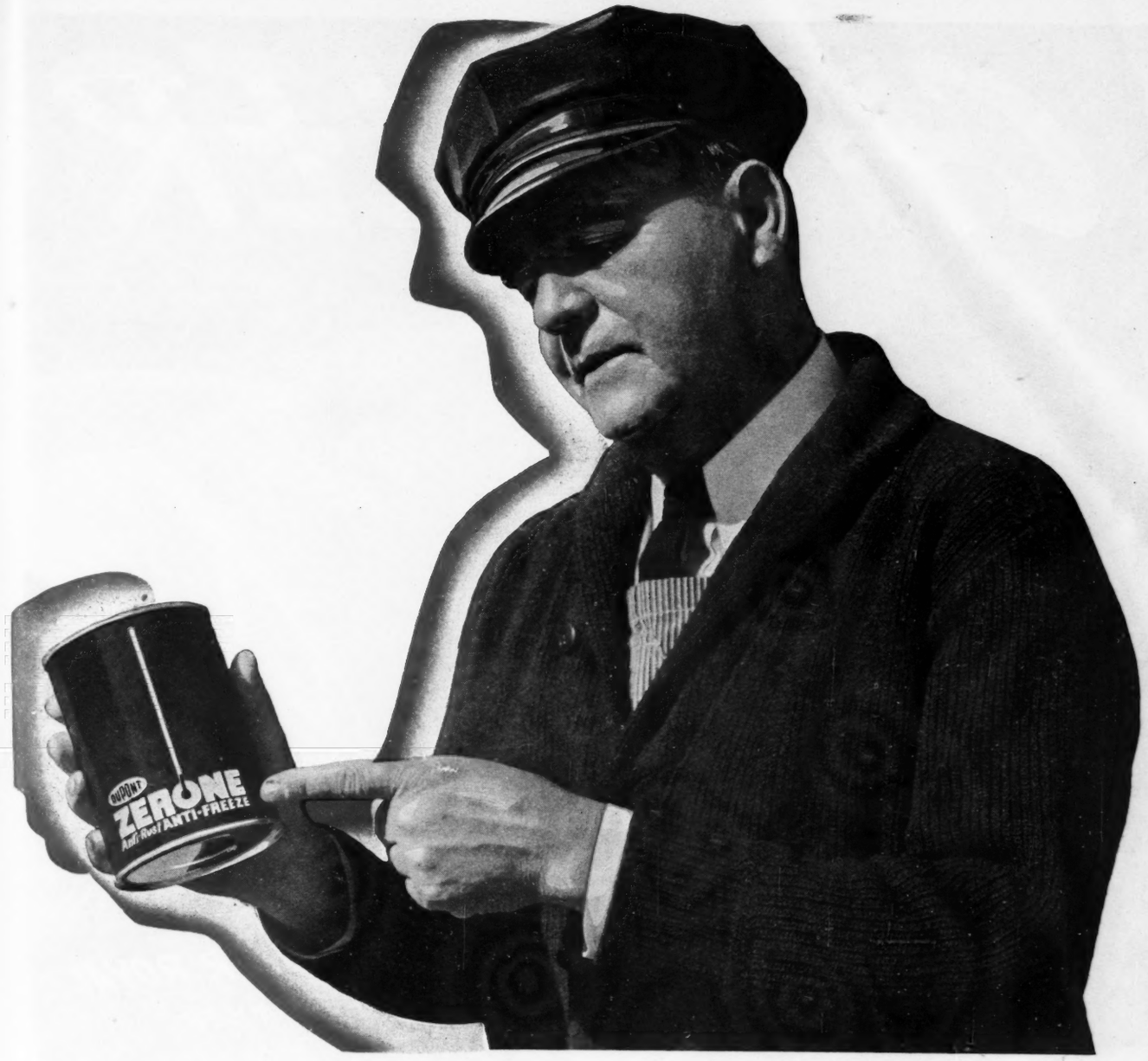
4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is . (This information is required from daily publications only.)

JOS. S. HILDRETH, *Business Manager.*

Sworn to and subscribed before me this 28th day of September, 1936.

JOSEPH W. FRITZ
(My commission expires Feb. 19, 1939.)
[SEAL.]



HE'S ALL SET FOR A PROFITABLE *anti-freeze season*

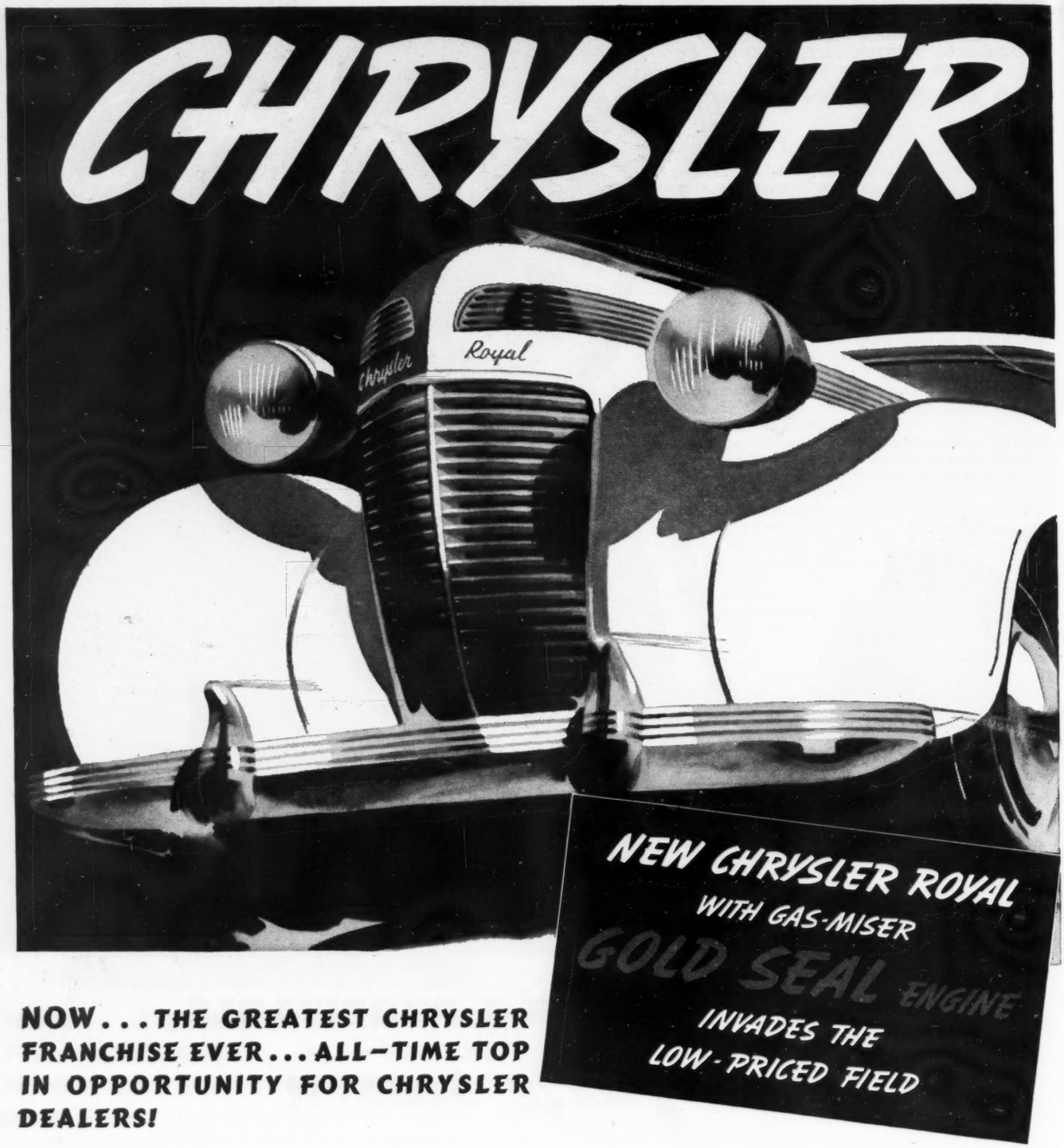
HE is one of the 100,000 dealers who are cashing in on the popular demand for "Zerone." The big blue and yellow "Zerone" banner in front of his station tells motorists that he sells this famous "215 Below" anti-freeze that's made by du Pont and costs only $1 a gallon.

The story of this amazing anti-freeze value is now being told to the motoring public in the most vigorous and most extensive advertising campaign "Zerone" has ever had. And this dealer is making all this advertising work to his own profit. Every car-owner in his neighborhood knows where to get "Zerone."

"Zerone" was the choice of 3,000,000 motorists last winter, and this year more car owners than ever will buy "Zerone." You still have a chance to share in the "Zerone" profits. Get in touch with your nearest jobber today. E. I. du Pont de Nemours & Co., Inc., "Zerone" Sales, Wilmington, Delaware.

DU PONT
REG. U. S. PAT. OFF.

STOCK "ZERONE"... SEE YOUR NEAREST JOBBER



NOW...THE GREATEST CHRYSLER FRANCHISE EVER...ALL-TIME TOP IN OPPORTUNITY FOR CHRYSLER DEALERS!

NOW IN LOW-PRICED FIELD!

CHRYSLER invades the low-priced field!

A brand-new Chrysler Royal! A low-priced *fine* car...new style from bumper to bumper!... a big, roomy car!... a power-packed economy car!

GOLD SEAL PRINCIPLE GIVES NEW POWER WITH ECONOMY

Chrysler engineers have created an amazing new engine . . . the Gold Seal . . . 93 horsepower . . . with the highest compression for its bore the world has yet seen.

Gold Seal—Chrysler's new economy engine—is dynamite under complete and velvety control . . . super-high compression . . . new larger exhaust valves of Austenitic steel . . . *uses ordinary gasoline.* Tests show 18 to 24 miles per gallon.

Here's the *only* engine in the low-priced field which gives *all* the good new things engineers have discovered to improve economy and performance. It delivers almost unbelievable power on a miserly consumption of *ordinary gas.* With Automatic Overdrive† it gives even greater economy at touring speeds.

WORLDS OF ROOM!

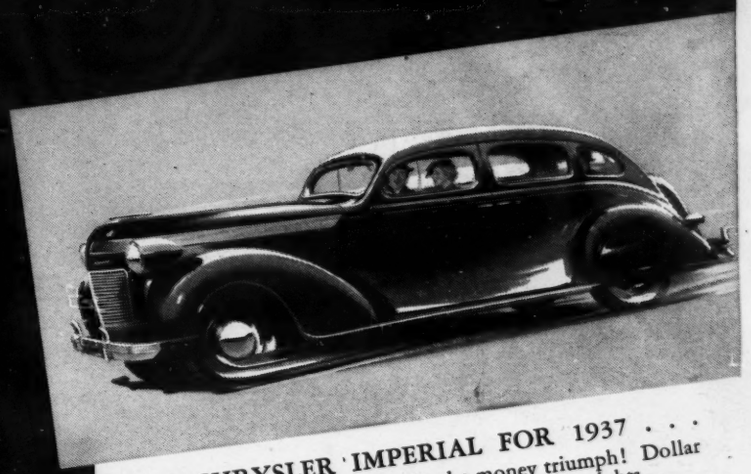
Chrysler Royal is lithe, sleek, dashing . . . a wonder for room . . . just read the dimensions in the diagram on the opposite page. Worlds of leg room, head room, elbow room . . . spacious, level tonneau floors.

Amazing new Aero Hydraulic Shock Absorbers . . . built like the landing mechanism of an airplane. They combine with advanced Airflow weight distribution and slow-acting Amola

TOPS 'EM ALL!

FOR 1937





NEW CHRYSLER IMPERIAL FOR 1937 . . .

Here's Chrysler's greatest more-for-the-money triumph! Dollar for dollar, the 1937 Imperial is the greatest of the eights.

Its beauty commands the eye . . . the sweeping grace of the long, proud hood . . . the impressive length and grace of the new, larger body . . . 204 inches over-all.

110 horsepower . . . a magnificent eight-cylinder power plant with dual carburetion and Floating Power. Increased space everywhere . . . wide, chair-high seats . . . broad, level tonneau floors.

Superb riding ease . . . from new Aero Hydraulic Shock Absorbers and Airflow's scientific weight distribution . . . enhanced by the length and size of the car. Safety *All-Steel* Bodies with beautiful one-piece steel roofs . . . Hydraulic Brakes . . . Automatic Overdrive† to give extra miles per gallon at touring speeds.



NEW CHRYSLER AIRFLOW FOR 1937 . . .

For 1937 . . . a beautiful new Airflow with new forward-reaching lines . . . new appointments . . . new luxuries.

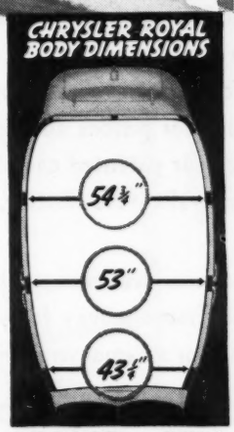
130 horsepower . . . yet with the efficiency of Airflow design and Automatic Overdrive†, this big, powerful car holds an official A. A. A. record of 18.1 miles per gallon on a transcontinental run.

A great, spacious car . . . 213 inches over-all . . . doors as wide as house doors . . . seats like divans . . . an all-adjustable front seat that moves up and down, forward and back, and tilts to any angle. The famous Floating Ride with scientific weight distribution. The safest car on the road . . . you actually ride *inside* the frame. Lifeguard tubes . . . Hydraulic Brakes.

steel springs to give such a ride as no other low-priced car ever gave before.

Positively regal trim! Appointments right out of custom cars! Upholstery superb in quality!

Valve-Seat Inserts . . . Floating Power . . . time-tested, genuine Hydraulic Brakes . . . Safety *All-Steel* Bodies . . . finger-touch, shockless steering.



AT LAST . . . REAL ROOM IN A LOW-PRICED CAR!

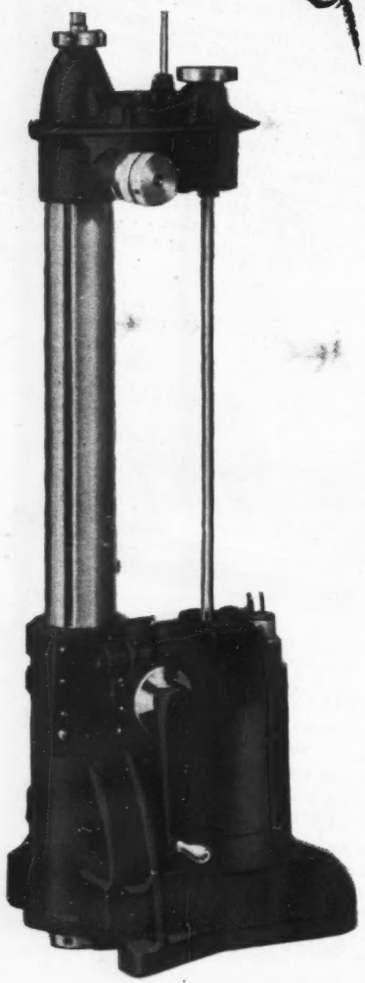
★ **With Plymouth in the lowest-priced field . . . the new Royal in the big-volume range of the low-priced field . . . the Imperial in the thousand-dollar range . . . and the Airflow dominating the luxury market . . . Chrysler dealers face their greatest opportunity.**

Naturally, demand for the franchise is keener than ever. Inquiries on file receive preference. Address Chrysler Corporation, Chrysler Sales Division, Detroit, Michigan.

☆ **CHRYSLER ROYAL** . . . 93 horsepower, 199 inches over-all. Ten body types, $715 and up.
☆ **CHRYSLER IMPERIAL** . . . 110 horsepower, 204 inches over-all. Six body types, $925 and up.
☆ **CHRYSLER CUSTOM IMPERIAL** . . . 130 horsepower, 223 inches over-all. Two body types.
☆ **CHRYSLER AIRFLOW** . . . 130 horsepower, 213 inches over-all. Two body types, $1475.

†Automatic Overdrive standard on Airflow and Custom Imperial. Available on all 1937 Chryslers at slight extra cost. All prices list at factory, Detroit.





WORLD'S MOST COMPLETE LINE OF BORING BARS

Per-Fect-O is made in 6 sizes, for all cylinders from 2.2" to 9" in diameter; from 10" to 30" deep.

"Now I can chain-smoke these high-priced heaters all day long, if I feel like it. This red-jacketed gold mine pays the bill—and a lot of others, too."

He's said it. No other shop tool can pay you as much in labor and parts as Per-Fect-O. For only Per-Fect-O can rebore a cylinder to factory-accurate, mirror finish in one cut—ready for pistons and rings. No need for a second cut. No need to hone. The four patented catspaws guide the cutter evenly all the way down the cylinder walls. No chatter, vibration, or weaving. On the button—every time.

Put in a Per-Fect-O—and your men will turn out better work, and more of it, in far less time. They'll make more money for you and for themselves. So get after your jobber—today—for a demonstration.

"IT PAYS TO VAN NORMANIZE"

VAN NORMAN

VAN NORMAN MACHINE TOOL CO., *Springfield, Mass.*

Help! Help! Save me from the junk heap

look what Porto-Power did!



Porto-Power includes 7-ton hydraulic ram; invertible 24" press — attachments, extensions, chains — all on a wheeled stand. Ram delivers full power in any direction.

One Quarter Century Experience

Phone Austin 5522

EST TOWN AUTO BODY AND SERVICE CO.

4640 WEST WASHINGTON BOULEVARD

Chicago, Illinois

July 16, 1936..

Blackhawk Mfg. Co.,
Milwaukee,
Wisconsin.

Dear Sirs:-

We are inclosing herewith a set of "before and after" photographs illustrating the possibility of economically rebuilding badly wrecked automobiles by employing the Blackhawk Porto Power.

It will interest you to know that the only sheet metal parts purchased for this job was one fender and a section of the hood. The turret top, doors, cowl, body posts, frame, etc. all being squared up and shaped with the Porto Power.

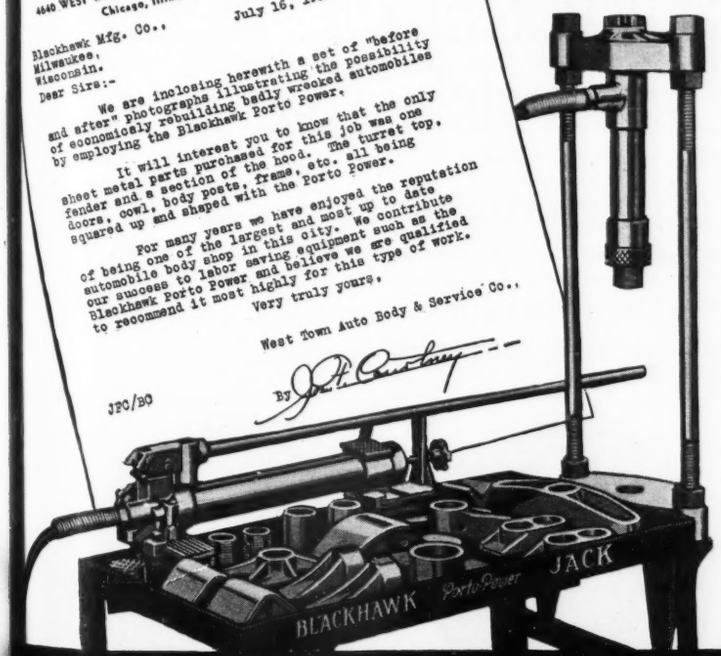
For many years we have enjoyed the reputation of being one of the largest and most up to date automobile body shop in this city. We contribute our success to labor saving equipment such as the Blackhawk Porto Power and believe we are qualified to recommend it most highly for this type of work.

Very truly yours,

West Town Auto Body & Service Co.,

By

JPC/BG



WRECKS like this are all in a day's work — if you own Porto-Power. A few quick set-ups — some straightening and smoothing out here and there — and the job's ready for the road again.

Porto-Power saves money for car owners — *saves time and makes money* for shop owners. Handles all types of fender and body work — bending, pulling, pressing — rod and frame straightening — inserting and removing springs, king pins, perch bolts, bushings, etc. A complete work-shop-on-wheels — and a "natural" for attracting more money-making jobs into your shop.

Porto-Power S-50, complete as shown, $114.50. Junior Body Shop Assortment, S-51, only $53.35. Prices slightly higher on West Coast and in Canada.

Ask your jobber salesman for demonstration — and write for FREE book —"How to Make Money with Porto-Power."

BLACKHAWK MFG. CO., Dept. MA-11, Milwaukee, Wis.

Exclusive Canadian Distributor:
THE CANADIAN FAIRBANKS-MORSE CO., LIMITED
Branches in all Principal Cities

BLACKHAWK Porto-Power

BLACKHAWK MFG. CO.
Dept. MA-11, Milwaukee, Wisconsin

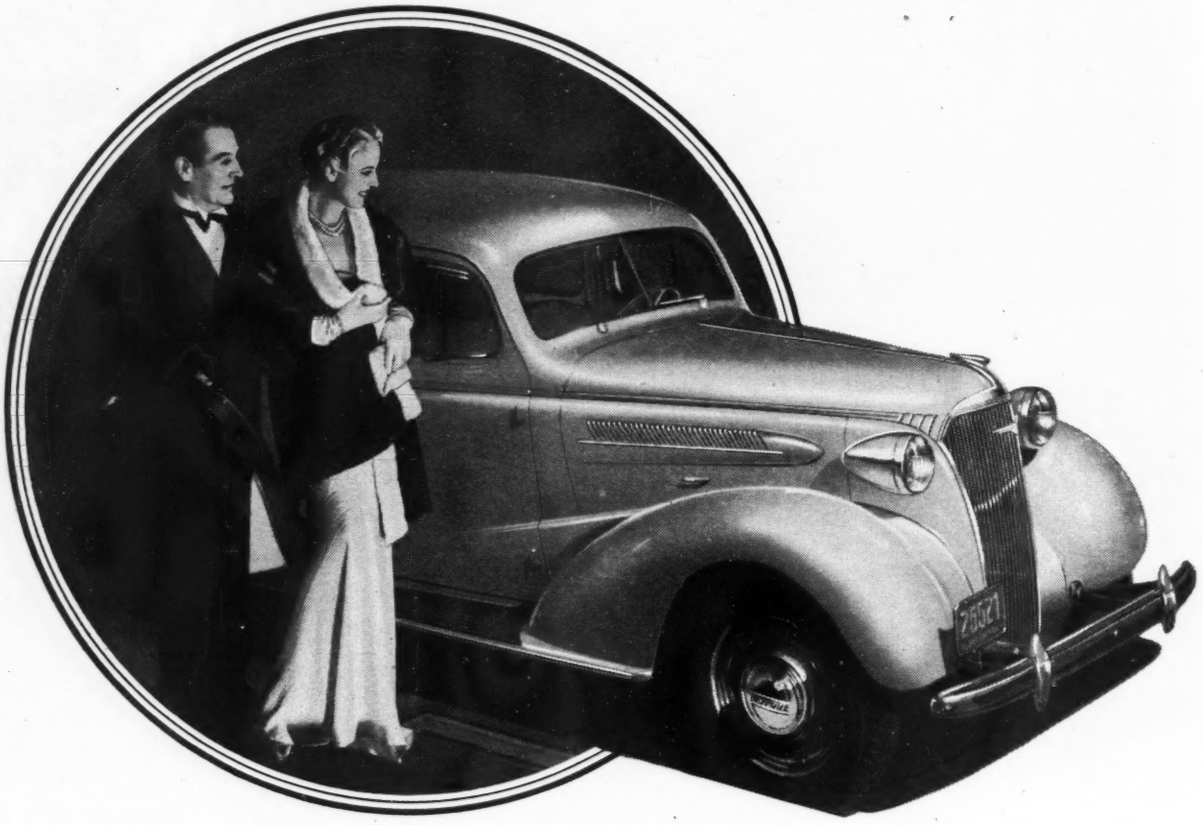
Please shoot that FREE book—"How to Make Money with Porto-Power."

Name.....

Shop Address.....

Preferred Jobber.....

Announcing



New CHEVROLET 1937

The Complete Car—Completely New

NEW BEAUTY—so different, so distinctive, so tasteful, it will thrill all America!

NEW SAFETY—that will give passengers a new full measure of protection!

NEW PERFORMANCE—the finest balance of speed, power and economy ever achieved!

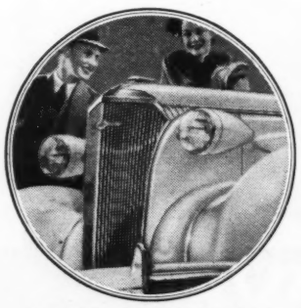
NEW COMFORT—so luxurious it will make people think of a custom creation!



NEW HIGH-COMPRESSION VALVE-IN-HEAD ENGINE



NEW ALL-SILENT, ALL-STEEL BODIES



NEW DIAMOND CROWN SPEEDLINE STYLING



PERFECTED HYDRAULIC BRAKES

WHEN YOU HAVE THE CHEVROLET FRANCHISE *YOU HAVE FRIENDS*

From
Diamond Crown Radiator to
Modern Tail-Lamp · · From Turret
Top to Stylcrest Wheels

THE NEWEST OF ALL LOW-PRICED CARS

and the most profitable car to sell

CHEVROLET Having achieved complete sales dominance in the low-price field, having experienced the most successful year in all Chevrolet history, having sold more than 1,250,000 passenger cars and trucks during the past twelve months, Chevrolet dealers now offer America the finest product it has ever been their privilege to sell—Chevrolet for 1937, *the complete car—completely new!*

Chevrolet for 1937 is destined to bring Chevrolet dealers an even greater volume of business and even larger dollar profits than they enjoyed during 1936. . . .

Because it reveals an even greater measure of superiority over its field than did *the only complete low-priced car* of last year . . . because it embodies *additional exclusive advantages* in beauty, comfort, safety and performance, which make it the most desirable car in its price range . . . and because the Chevrolet Motor Company will continue to extend the fullest degree of co-operation to America's most progressive dealer organization.

Again in 1937, Chevrolet dealers will receive complete confirmation of their own well-known saying—*"When you have the Chevrolet franchise, you have friends!"*

CHEVROLET MOTOR COMPANY, DETROIT, MICHIGAN

**Knee-Action and Shockproof Steering on Master De Luxe models only*



IMPROVED GLIDING KNEE-ACTION RIDE*



SAFETY PLATE GLASS ALL AROUND



GENUINE FISHER NO DRAFT VENTILATION



SUPER-SAFE SHOCKPROOF STEERING*

How to do— 9 MAJOR AUTO SERVICE JOBS



Write for bulletin No. 33-D giving valuable instruction on the 9 most important jobs in the motor service shop. Sent Free.

How to Grind Valves—How to Bore Rebabbited Connecting Rods—How to Test and True Differentials—How to Machine Flywheels—How to Make Bushings—How to True Armatures—How to Cut Screw Threads—How to Finish Pistons—How to True Brake Drums. Latest authoritative methods for doing these important jobs.

South Bend PrecisionLathes can be purchased for as low as $75 less motor drive, and on easy payments of $19 down and $6.50 a month. Write for Catalog 15-T. Sent to any address free, postpaid. A post card will bring it.



16" x 6' Underneath Belt Motor Driven Quick Change Gear Lathe.....$779
($155 Down, $40 a mo., 17 mos.)

Wt. 2300 lbs.

SOUTH BEND LATHE WORKS
242 E. Madison St., South Bend, Indiana, U. S. A.

SOUTH BEND *Precision* LATHES

FULTON *on the* AIR!



TO PROMOTE CONSUMER SALES OF
FULTON DEFROSTING EQUIPMENT

THROUGHOUT the fall months automotive wholesalers and dealers have purchased Fulton safe-driving accessories generously — stocking these quality products in anticipation of an active winter demand.

Now the Fulton Company lends its active support to stimulating this already active demand! During the months of November and December practically the entire Fulton advertising budget will be devoted to *consumer sales promotion* . . . through the effective, far-reaching medium of RADIO. Time will be used over leading stations from Coast to Coast . . . featuring Fulton Electric Sleet-Frost Shields, and defrosting Fans and Blowers.

DEALERS: *Display and talk* Fulton defrosting equipment. Be prepared to supply your customers when they *ask* for these radio advertised Fulton-built safe driving winter accessories. *Use* the display material and sales helps available through your jobber.

THE FULTON COMPANY
1912 S. 82nd STREET MILWAUKEE, WIS.

CLEAR VISION *is the* FIRST ESSENTIAL *to* SAFE DRIVING

For a Bigger Season
with your
Anti-Freeze Solutions

Dispense them the quick, convenient way with the



IMPERIAL LIQUID DISPENSER

EASILY attachable to all tanks and barrels. Removes all the liquid without tilting the barrel, which remains upright, and therefore requires less space at all times.

Air-pressure forces the liquid up to the faucet, and a safety relief valve prevents excess pressure that might cause the tank to swell. Genuine Sette metal-to-metal faucet, which can be used with almost any kind of liquid.

For alcohol, glycerin and other anti-freeze liquids, also for turpentine, oils, thinners, liquid chemicals, etc.

No. 45-A (Dispenser Only) $2.50

Order from your jobber. Write also for Catalog 113.

IMPERIAL BRASS MFG. CO.
1217 West Harrison St., CHICAGO

Classified

INVENTORS—Protect your rights. Before disclosing your invention to anyone send for free blank form "Evidence of Conception" and instructions. Personal attention given all cases. Lancaster, Allwine & Rommel, 415 Bowen Building, Washington, D. C.

INVENTORS—Small ideas may have large commercial possibilities. Write us for Free book, "Patent Guide for the Inventor" and "Record of Invention" form. Delays are dangerous in patent matters. Free information on how to proceed. CLARENCE A. O'BRIEN & HYMAN BERMAN, 68-H Adams Building, Washington, D. C.

GARAGES—DOUBLE BUSINESS IN 3 MONTHS: Our monthly advertising cards bring quick results. Lowest prices. 1000, $5.00; 500, $3.50. Get samples. Crior Publ., 1840 East 87th St., Cleveland, Ohio.

MOTOR AGE

—is a publication keyed directly to the needs of the maintenance field. Built on the requirements of the serviceman. Edited by Bill Toboldt. Read it every month.

A Chilton Publication

CHESTNUT AND 56TH STS.
PHILADELPHIA, PA.

INDEX

N

National Carbon Co., Inc. 2
National Machine & Tool Co. 102
Niehoff & Company, C. E. 108
Noblitt-Sparks Industries, Inc. 101
Norma-Hoffmann Bearings Corp. 107

O

Okonite Co. Newtype Automotive Division 83
Olds Motors Works 66-67

P

Perfect Circle Companies 2nd Cover-1-77
P. O. B. Mfg. Co., Inc. 101
Pontiac Motor Co. 55
Prest-O-Lite Battery Co., Inc. 88

R

Ramsey Accessories Mfg. Corp. ..... Back Cover
Riess Mfg. Co. 103

S

Sealed Power Corp. 9
Service Spring Co. 102
Shurhit Products, Inc. 100
Sight Feed Generator Co. 108
Simmons Mfg. Co. 105
Sinko Tool & Mfg. Co. 99
Sleetex Co., Inc. 100
South Bend Lathe Works 96
Sta-Tite Piston Rings 9
Steelcraft Piston Ring Sales, Inc. 103
Stromberg Motoscope Corp. 98

T

Thexton Mfg. Co., Inc. 100
Thompson Products, Inc. 82
Thomson, H. R., Inc. 98
Timberlake, J. B., & Sons, Inc. 97
Torit Mfg. Co. 98
Trainor National Spring Co. 104

U

United American Bosch Corp. 14
United States Asbestos Div. of Raybestos-Manhattan, Inc. 7

V

Van Norman Machine Tool Co. 92
Vellumoid Co. 102
Victor Manufacturing & Gasket Co. 3

W

Wagner Electric Corp. ..... 3rd Cover
Walker Mfg. Co. 10
Weatherhead Co., The 78
Weidenhoff, Joseph, Inc. 103
Wind-Impeller Electric Works 104
Wittek Manufacturing Co. 99
Woodworth Specialties Co. 105

About Leadership

first eight months of 1936

NUMBER OF NON-DUPLICATING ADVERTISERS

CHILTON GROUP	658
Nearest competitor	167
Next competitor	152
Next competitor	132
Next competitor	120
Next competitor	112
Next competitor	100
Next competitor	90
Next competitor	87
Next competitor	38

This material has been compiled by Chilton Company's Statistical Department from regular checking copies, and is believed to be correct. If any error is found, we would appreciate having it called to our attention so that correction may be made in future issues of this record.

DOMINATE!



"NORMA-HOFFMANN"

ANGULAR CONTACT and SELF-ALIGNING

PRECISION BEARINGS

Longer life and more mileage are built into these rugged PRECISION Bearings, which come with heavy-duty bronze retainers. You can use them in your hardest replacement jobs and be certain your customers will get the extra-serviceability that marks every PRECISION Bearing in the NORMA-HOFFMANN line of 108 distinct series. Write for the Price List, and name of nearest distributor.



NORMA-HOFFMANN BEARINGS CORP'N., STAMFORD, CONN., U. S. A.

PRECISION BALL, ROLLER AND THRUST BEARINGS

ENGINEERED FOR Peak PERFORMANCE



Increase your coil sales by stocking this quality product.

Colder weather will necessitate the repowering of many cars with better ignition coils. Be prepared to render prompt service.

Type "H" Hi-Speed Universal Coil will fire every cylinder on a 6, 8 or 12-cylinder motor up to maximum speed.

Type "H" windings are also available in lock switch coils.

Ask for our Y-30 Coil Kit —services 19 popular cars.

WRITE FOR New 1937 CATALOG

C. E. NIEHOFF & CO.
230 W. SUPERIOR ST., CHICAGO, ILL.

For Your PROTECTION ask for AR-NU ARMATURES by name

THE ARMATURE CO. STANDARD OF AMERICA

When you ask for an AR-NU Armature you get a product made in a plant devoted exclusively to the manufacture of Quality Armatures. Back of each AR-NU Armature are years of painstaking effort to make the best Armature possible. Efficiency in production makes it possible to sell AR-NU Armatures at prices no higher than asked for unknown makes. Ask for an AR-NU Armature next time.



ORIGINAL SPECIFICATION SIZES

We have ALWAYS made it our policy to follow original specification. In AR-NU Armatures the correct size wires are used, and they are given the specified number of turns.

Ask Your Jobber or Write Us

THE ARMATURE CO.
7500 Stanton Ave. Cleveland, Ohio

SAFETY LIGHTING EQUIPMENT

It Cuts Through Fog Like A Knife Through Cheese

K-D SHO-WAY FOG LAMP

NO more fear of fog—snow—sleet—rain! The special lens, designed by K-D lighting engineers, slashes through weather handicaps.

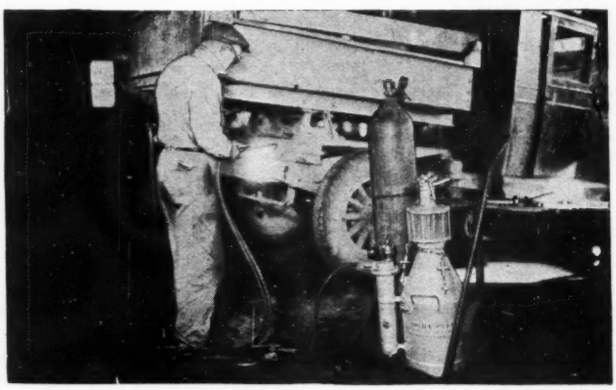
New curved 6" lens of special glass which gives maximum visibility in any weather. Silver plated, non-tarnishable reflector. New pre-focused Mazda bulb. Black and chromium or all chromium finish.



Lighter roads make safer loads.

The K-D LAMP Co.
606-610 W. Court St.
Cincinnati, Ohio

LOWER COSTS mean GREATER PROFITS!



Today, wherever metals are fabricated or repaired, welding is done—and, except for production jobs, is usually done less expensively by the oxy-acetylene method.

The owner of the smallest garage pays no more for his acetylene than does the largest factory—if he uses a SIGHT FEED Generator.

Any torch may be used with a SIGHT FEED; they may be used anywhere; they are safer. Ask your jobber, or write:

THE SIGHT FEED GENERATOR COMPANY
Richmond . . . . . Indiana

NOV 20 1936

MOTOR AGE

CHILTON PUBLICATION

DEVOTED TO THE INTERESTS OF THE INDEPENDENT REPAIR SHOP

NOVEMBER

1936

IN THIS ISSUE

MOTOR AGE'S AUTO SHOW

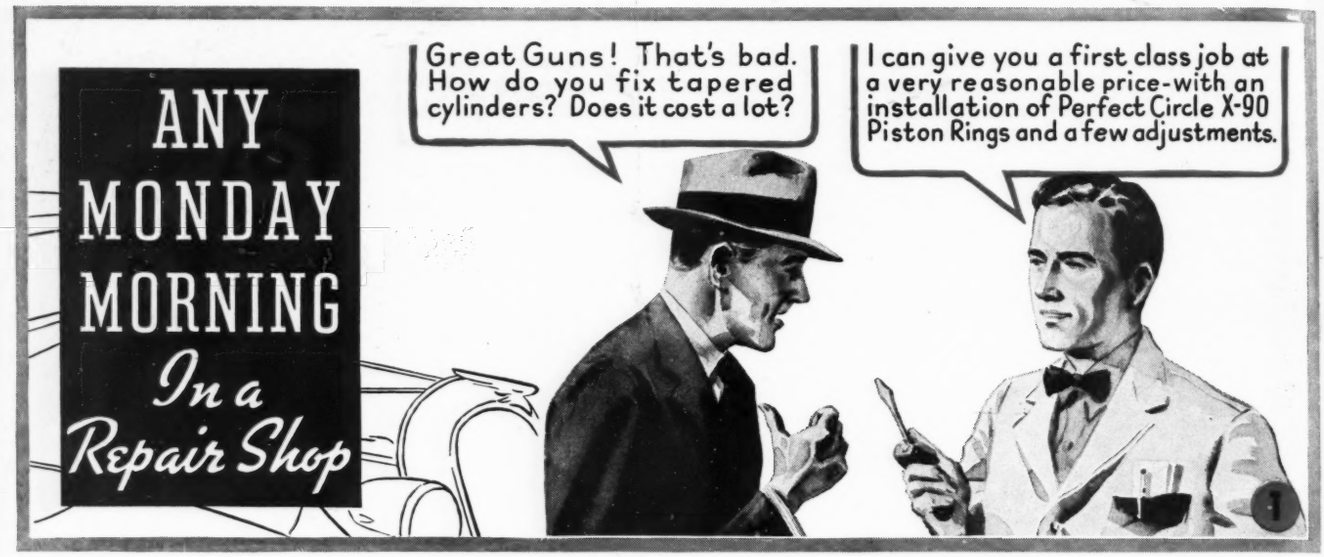
Here is a bolt by bolt description of all the new cars, written for all maintenance men. Not every one can go to the New York Auto Show and even those who do go there can't look under all the hoods nor into all the housings. Motor Age did just that in preparing these special descriptions.

Nuvolari's Victory

At the recent revival of the Vanderbilt Cup Races at Roosevelt Raceway, foreign cars and drivers led the field to victory. Bill Toboldt and Bob Hankinson, who served on the Technical Committee at the Race, give you the story behind the story . . . how it was, and why it was, that foreign cars outclassed American entries . . . which Americans performed most successfully . . . and how.

Readers' Clearing House

In the hustle and bustle of preparing a special issue on the new cars, we pause to thank the thousands of readers who continue to write Readers' Clearing House with their everyday problems. Don't cuss, write us.







PERFECT CIRCLE

It costs more... and is worth it!

Wagner LOCKHEED NO. 21 HYDRAULIC BRAKE FLUID



A New and Superior Product

WAGNER Lockheed No. 21 Hydraulic Brake Fluid sets a new high standard of efficiency and performance. It is the result of many years of costly research and exhaustive tests in the laboratory and on the road.

This amazing new product is chemically processed and therefore chemically stable over a wide temperature range. Cold weather operation is improved when No. 21 is used. This fluid also has greater stability under high temperatures.

The introduction of No. 21 is in keeping with Wagner's policy not to compromise with safety. This is a superior product, and even though the initial cost is slightly higher, the wider range and greater efficiency of this fluid makes it less expensive to the car or truck owner in the long run.

●

1. with chemical stability

●

2. does not cause any detrimental effect on the brake system

●

3. retains essential characteristics over a wide operating range

●



←Be sure each No. 21 can has this red cap — and refuse to accept any No. 21 can with this seal broken →



Mail coupon for details...
..also get FREE booklet

AUTOMOTIVE PARTS DIVISION H136-7

Wagner Electric Corporation ST. LOUIS, U. S. A.

Send complete information on Wagner Lockheed No. 21 Hydraulic Brake Fluid. Also send FREE copy of "How to Bleed and Refill Hydraulic Brake Systems."

Name.....

Address.....

City..... State.....

RAMCO ACCEPTED AS THE STANDARD OF COMPARISON IN THE SPRING-RING FIELD



TECHNICALLY PERFECT



PROVED IN MILLIONS OF CARS



PIONEER MANUFACTURERS—MATCHLESS RECORD OF SUCCESS

SIMPLE are the reasons why Ramco is acknowledged leader among all spring-type piston rings . . . why it has won overwhelming acceptance with both consumer and service man alike. Ramco is not only the pioneer spring-ring construction. Not only a correctly engineered ring of simple design that seals compression and ends oil-pumping instantly. To its original *promise* of technical superiority the Ramco Spring Ring principle has added years of unquestioned **PROOF**. Year after year, this pioneer inner spring ring construction has functioned perfectly under the most gruelling *service* requirements of millions of cars.

No wonder dominant consumer demand has been won by Ramco. No wonder repairmen *know* that a Ramco job means completely satisfactory results every time without costly "comeback" losses. No wonder the proved Ramco record has brought proved profits, a dependable, ever-growing business to repairmen everywhere. Made Ramco the sensation of the service field . . . by far the largest selling spring-type piston ring, with the broadest distribution.

It's true—no other expander-type piston ring can challenge Ramco's record. That's why Ramco is accepted as the standard of comparison in the spring-ring field. Available at all good jobbers nationally.

RAMSEY ACCESSORIES MFG. CORP.
3699 Forest Park Blvd., St. Louis, Mo.

RAMCO MOTOR OVERHAUL

CORRECTS PISTON ROCK — THE MAJOR CAUSE — OF MOTOR DEPRECIATION

RAMCO PISTON RINGS



RAMCO PISTON SKIRT EXPANDERS

PATENTED IN UNITED STATES AND CANADA, OTHER PATENTS PENDING